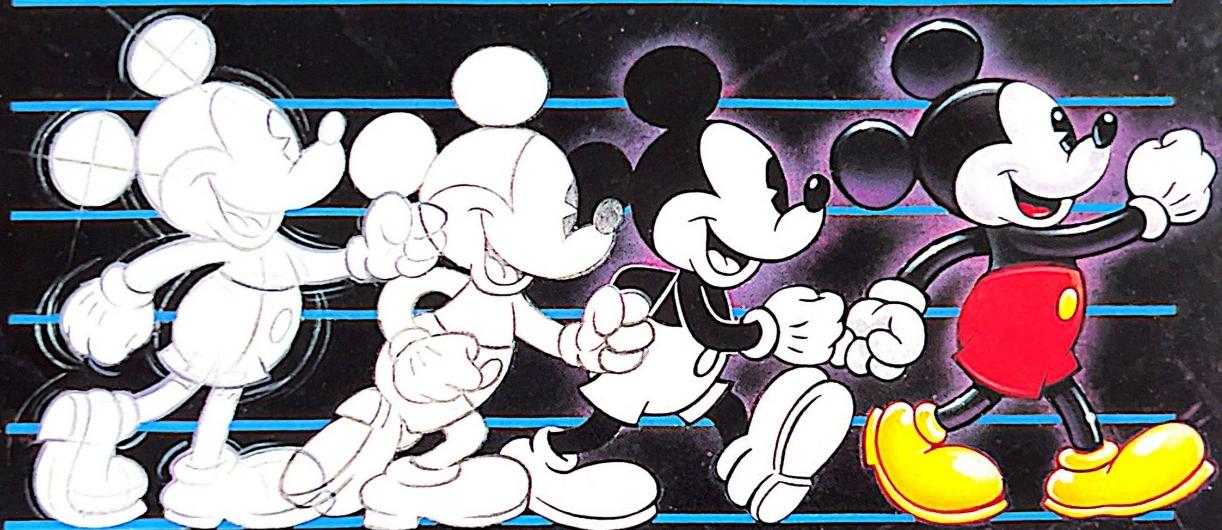


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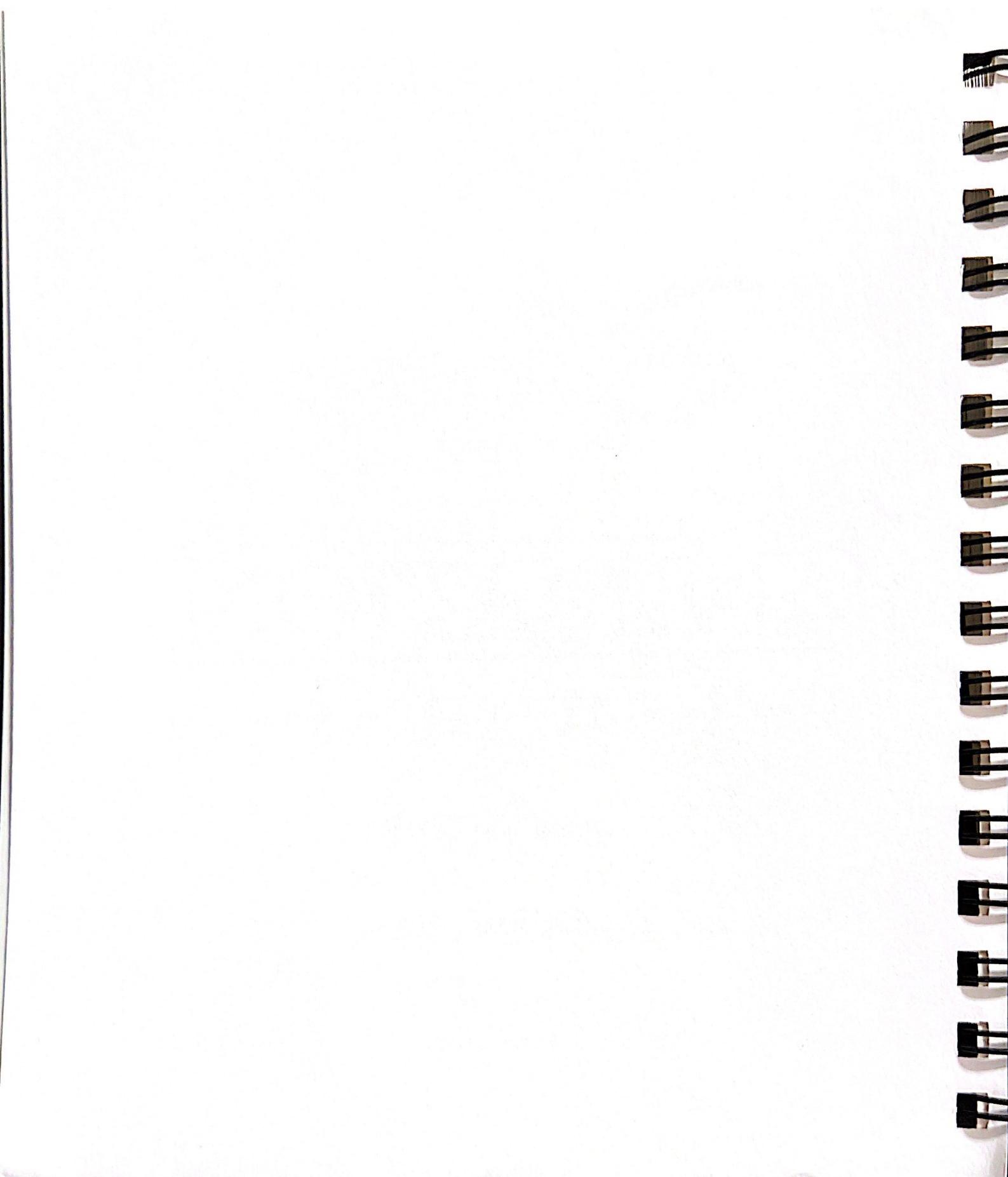
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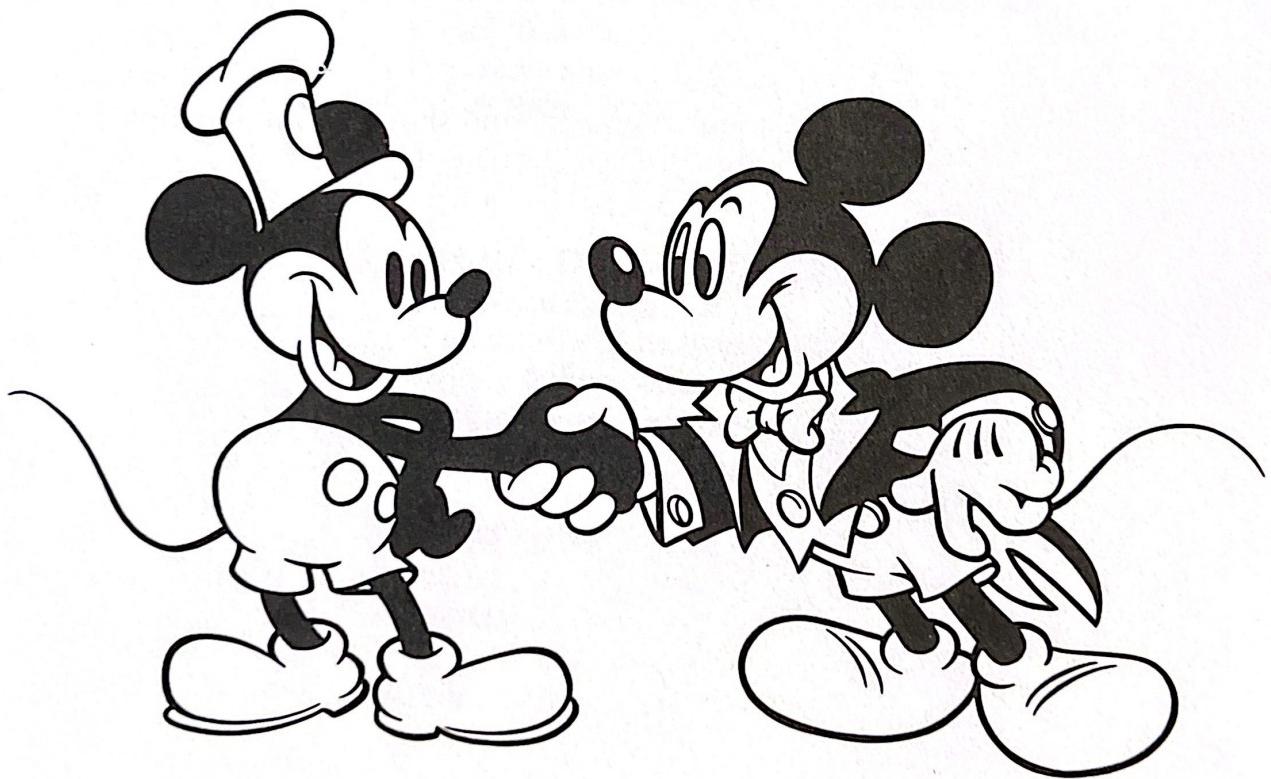
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## CHAPTER 1

# The Disney History of Animation



---

## The Disney History of Animation: From Pencil to Pixel

Snow White, Cinderella, Cruella De Vil, Captain Hook, Peter Pan, Mickey Mouse, Donald Duck — the list of Disney animated characters goes on and on. We've laughed and cried with them, and shuddered at their evil ways. Even though they're animated, they're so believable that they have become a part of our memories and culture.

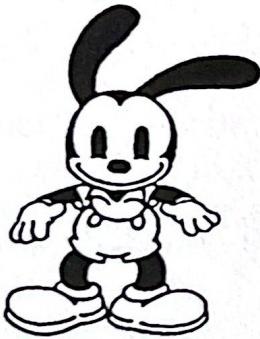
Less than a century ago, who would have thought that drawings could not only move, but elicit such emotions in audiences around the world? Thanks to Walt Disney and the animators that worked with him, animation has reached amazing heights. The result of this team's efforts is a style of animation that's truly unique and recognized throughout the world.

In the following pages you can trace the history of Disney animation — how it all started and how it's done today. This understanding just might provide you with some inspiration as you create your own animations with The Animation Studio.



## The Early Days

The foundations of Disney animation began while Walt Disney was a boy selling newspapers. Between 1870 and 1900 (before Walt was born), newspaper circulation soared in city areas, and the newspaper cartoon began to change. Comic strips were developed which introduced on-going characters and stories. As the popularity of the comic strip grew, more artists were attracted to the field. It was a short step from the comic strip panel to animation!



Winsor McCay was one of the first artists to take that step. His inspiration came from a "flip" book that his son showed him. Popular with children at the time, the flip books were a series of drawings cut from a sheet and rubberbanded together. When the pages were flipped, the drawings moved. The result of this inspiration was the creation of "Little Nemo" in 1911 and "Gertie, The Trained Dinosaur" in 1914.

Other artists were experimenting with animation at the same time. In 1914, John Bray began printing copies of backgrounds on translucent paper, and when Earl Hurd patented cel animation in 1915, the Bray-Hurd method of drawing characters on cels (celluloid sheets) and photographing them against a single background was born. This method became the fundamental process in creating animated films.

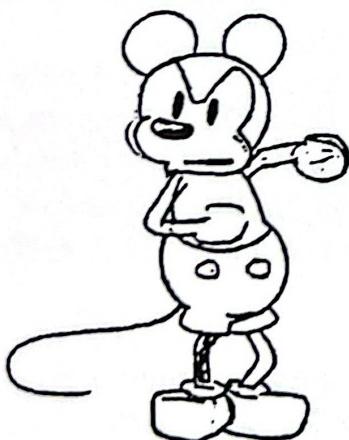
Walt Disney was interested in drawing as a child, but due to his family's moves, he wasn't able to get a formal art education. One of Walt's first jobs was working with the Kansas City Film Ad Company, making short animated "gags" for a local theater. Walt later moved on to set up his own business, creating a series of fairy tale shorts called

Laugh-O-Grams. He then combined a live character with animated figures in the first of the Alice Comedies. With little hope for success of the series, Walt moved to Hollywood where he hoped to find a job in film directing.

Hollywood wasn't the easiest place to find work. Luckily, Walt was able to sell his Alice cartoon idea to a distributor and set up shop in the rear of a real estate office with his brother Roy. The cartoon series was successful enough for Walt to set up a small studio and entice his friends from Kansas City to join him in Hollywood to help with this new and exciting business. But the popularity of the Alice cartoons began to fade and the distributor, a businessman by the name of Charles Mintz, was pressing Walt to create a new cartoon character. Although "Oswald, The Lucky Rabbit" was a success, Mintz demanded more cartoons for reduced payments. Eventually, Mintz cut Walt out of all the rights to Oswald.

It was at this low point in Walt Disney's career that Mickey Mouse was born. According to legend, Walt was on a train returning from a meeting with Charles Mintz in New York when he began to sketch a funny little mouse that somewhat resembled Oswald, The Lucky Rabbit. The mouse was initially named Mortimer, but Walt's wife Lillian quickly renamed the character Mickey. The character's personality was the result of Walt's inspiration, while the familiar physical appearance was the work of Ub Iwerks, one of Walt's friends from Kansas City. Mickey couldn't have appeared at a better time for Walt and his small group.

While Walt was beginning work on two cartoons, sound was introduced to the film industry. Walt realized the future of films included sound, so he decided to drop everything to create a cartoon with a synchronized sound track.





The staff began intensive work on "Steamboat Willie," inventing the sound synchronization process as they went by scoring the crude soundtrack with beats precisely timed to match the movements on the screen. Walt knew that the illusion would only work if the soundtrack was perfectly synchronized and sounds seemed to come from the characters. The staff performed test runs, adding music and sound effects until the result was convincing. And sure enough, the audiences were convinced. "Steamboat Willie" premiered on November 18, 1928 and was an instant success. Not only was the spunky little mouse a star, Walt and his staff pushed animation into a new and exciting phase of growth.

Quickly becoming adept at synchronization, Disney began work in 1929 on the now-classic "Silly Symphonies," a series of cartoons combining music and animation. In 1932, Disney again broke ground with the Silly Symphony "Flowers and Trees," which was the first cartoon in full color. With the huge success of the "Three Little Pigs" in the following year, the animators' growing skill at characterization and story structure was evident. Not only did the film present characters with defined personalities in a clever, well-written story, but it was also the first time a song written specifically for a cartoon became popular. Frank Churchill's tune, "Who's Afraid of the Big Bad Wolf?" was as big as the cartoon itself.

Throughout this period, the Disney artists continued to train, taking art classes at the studio. To aid in story development, Walt created his story department in 1931, and during that time introduced the use of storyboards. Storyboards remain a crucial tool in the development of every cartoon to this day. Laid out much like an oversized comic strip, they're made up of a series of sketches that show every stage of the action, story, and character

development. Storyboards are used through the development process of discussion, revision, rejection, and finally, production.

With these and other technical developments in place, the Disney staff was prepared to take on their next "impossible" challenge: the creation of a full-length animated feature. In the twenty-five years since Little Nemo's appearance, the Disney animators had made amazing advances in the art, learning to tell structured, interesting stories, create characters with detailed personalities, and give them the illusion of real, lifelike movement. But until now, they had mainly worked with animals and objects as their stars, and the stories were limited in length. Was the Disney staff advanced enough to animate convincing human beings? Could they tell a story that would hold the audience's attention for a full hour or more? Hollywood didn't think so, and Walt's newest project was scoffingly called "Disney's Folly."



Work officially started on "Snow White and the Seven Dwarfs" in 1934. Seven hundred and fifty artists eventually worked on the film, making some two million sketches. It was a labor of love from start to finish, with attention paid to every aspect of development. Capturing the essence of human movement in a believable way was an enormous challenge for the animators, who studied films and worked with actresses, actors, and dancers. Many types of animals on the lot provided for Snow White's forest friends. Technical problems were encountered and solved along the way, and again, the studio invented and refined new processes and techniques as the film progressed. "Snow White" had more depth in its backgrounds and settings than its predecessors. The multiplane camera was used to shoot layers of action and background at the same time.



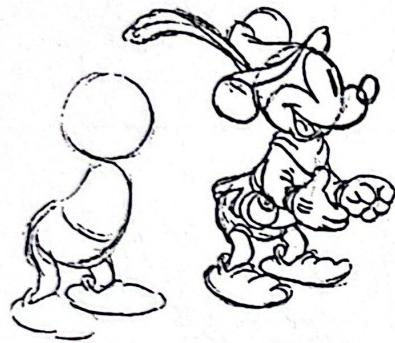
The entire project was a huge gamble for Disney, with every step presenting new challenges. But on December 21, 1937, when "Snow White and the Seven Dwarfs" opened in Hollywood, the gamble paid off sensationaly. It became the top grossing film of its time. Today, over 50 years later, "Snow White" continues to delight and amaze audiences, and has earned a place in film and animation history. Its most important achievements were in storytelling, character development, and the animation of the human form. The standards and techniques created and fine-tuned in "Snow White" have been used by Disney in all of the subsequent full length Disney animated features, and by other animated filmmakers everywhere.

---

## The Disney Process

Today, the basic stages in the making of a feature film are the same as those followed in creating "Snow White." The story idea is the first step in the Disney process. Whether inspired by a classic book, a well-known fairy tale, or an original idea, the first step usually starts with the question, "What if...?" As the story idea is developed, a script is drafted and rough sketches of characters are storyboarded to provide a framework and springboard for more ideas. Gradually, from the piles of drawings and ideas, characters emerge, relationships develop, and action falls into place.

## Roughs

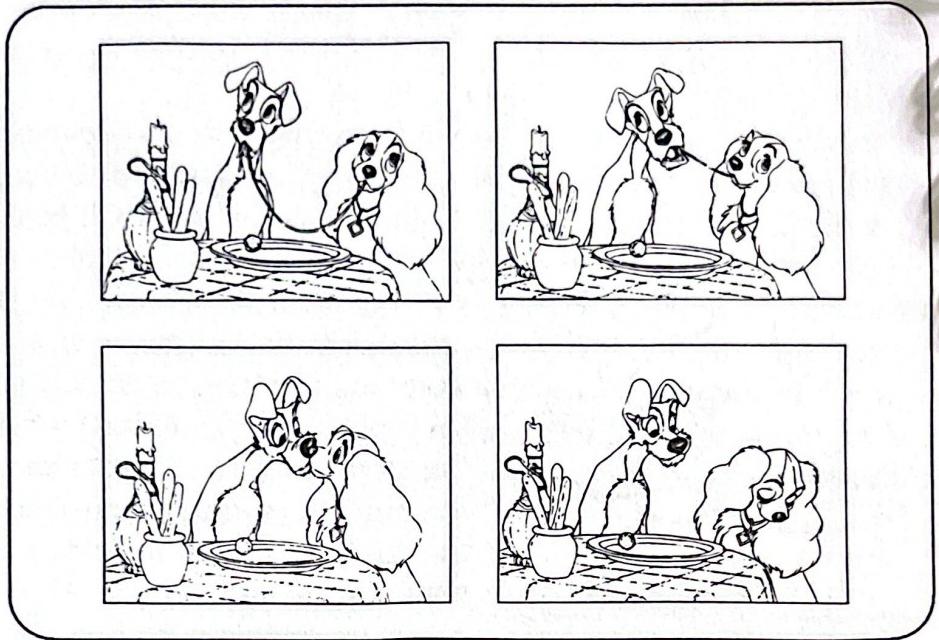


While the story idea is developing, inspirational art begins. Artists research and create concepts for settings, costume, color and design that will give the film its style and flavor, whether it's the uptown chic of "Oliver & Company" or the Gothic romance of "Sleeping Beauty." Meanwhile, character artists continue to create and refine the rough character sketches, working to capture the characters' personalities in their physical appearance. Under the guidance of a director, the story is scripted, and a rough sound track recorded for the animators to use. The voice actors and actresses chosen for the film play an important role in the way characters sound, look and behave. All the elements — from scripts to character drawings and inspirational art — are completed before moving on to storyboarding.

## Storyboards

Like a very detailed comic strip, storyboards allow the filmmakers to incorporate visual cartoon action that would be difficult to describe. Storyboarding actually "pictures" the film, which can't be done with the words of a traditional script. All of the ideas are brought together and reworked until the complete film is shown in a series of still drawings.





*Figure 1-1. Storyboard*

These figures are refined and corrected, then numbered and filmed to become the story reel. The story reel will also be revised, corrected, reshoted, and retested many times as the creative team works for proper timing, correct development of ideas and gags, good staging, and exciting believable characters. Eventually, the storyboard becomes the final "shooting script" of an animated film.

## Layout

Once the major story sequence is defined, final voice casting completed, and a final soundtrack recorded, the artists will “flesh out” ideas, creating hundreds of small details that bring the characters and the story to life on the screen. At this stage, layout artists compose the scenes in which the characters will act, providing the staging for entrances, exits, and other movements. Layouts go to the animators who will animate the action. Pencil drawings of the layouts also go to the background artists to begin creating final artwork.

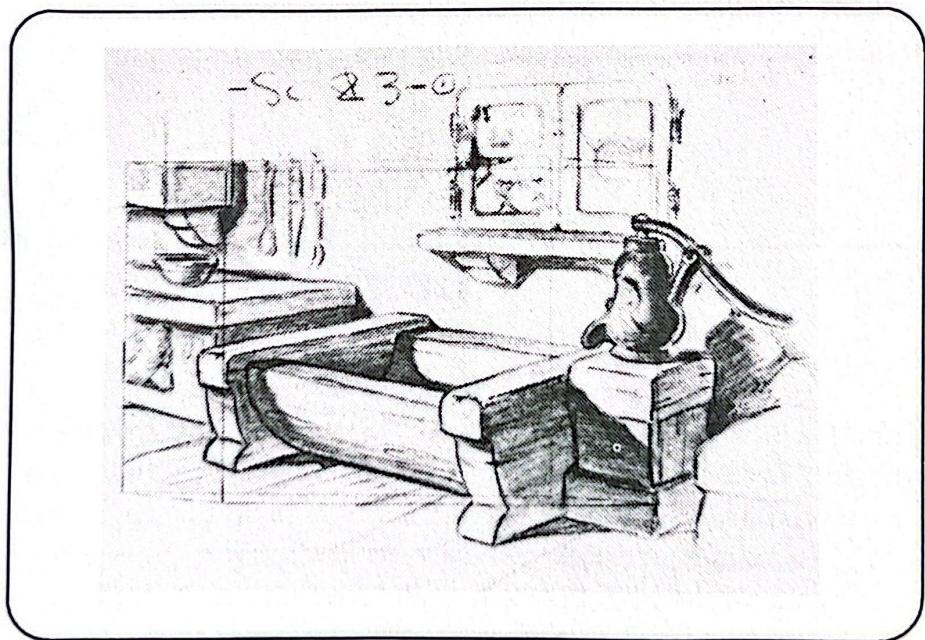
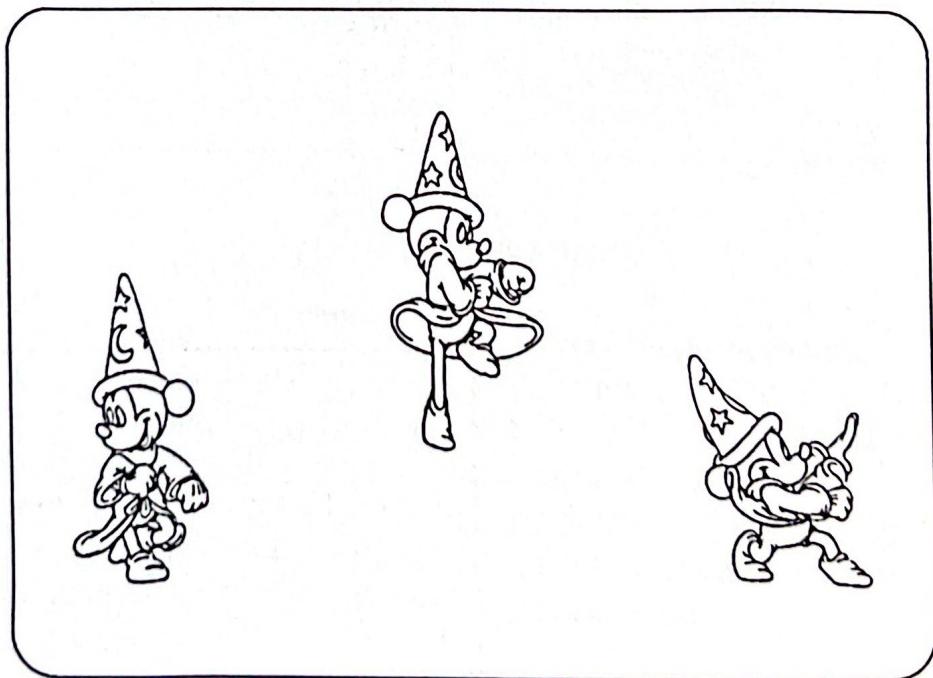


Figure 1-2. Example of Background Sketch



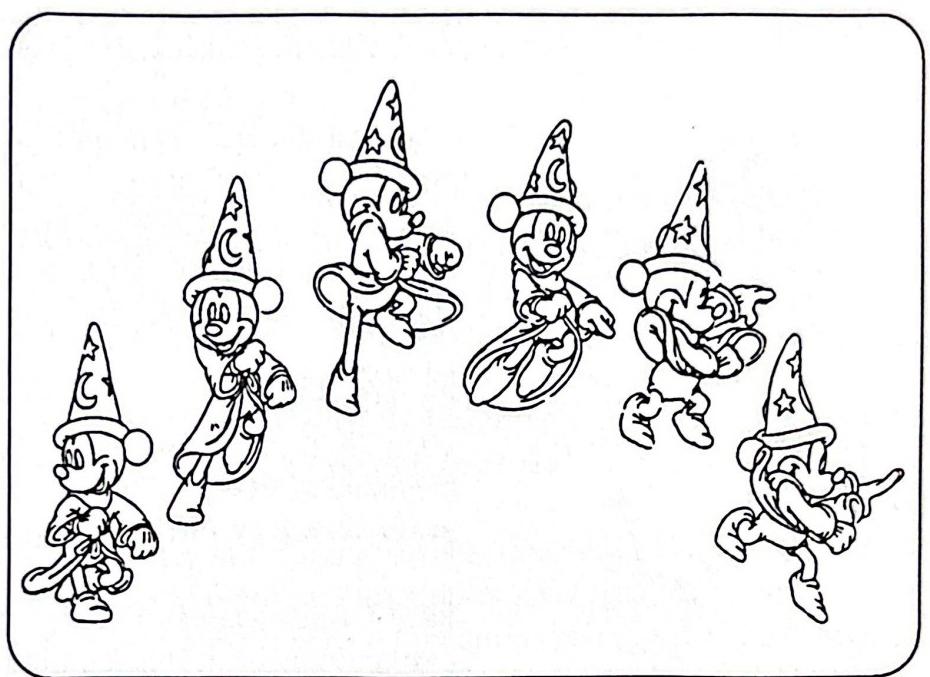
## In-Betweening

Completed Disney animation is rich in variety and detail, and includes many steps in its creation. Animators create the main “acting pose” for each character’s movement on screen. Each action a character makes has a beginning and an ending pose, gesture, or expression, which are clearly defined by the animators. These main poses must capture the character’s personalities, moods, emotions, and the intent and purpose of the action.



*Figure 1-3. Beginning and Ending Extremes*

After the main poses are complete, “in-betweeners” draw the subtle transition movements in between each pose. These in-between drawings also add to the detailed richness of the overall animation.



*Figure 1-4. In-Between Examples*

## Final Production

Eventually, the rough pencil drawings are cleaned up (redrawn with sharp, clear lines) before going on for inking and painting. Characters are drawn in ink and then painted on a sheet of clear acetate known as a cel. The character cels are photographed over the separate background paintings. Cels can be reshot, retested, and revised as needed until the entire film is ready for final editing.

It can take anywhere from two to four years after the “What if...?” stage before a Disney animated full-length feature film is ready for release.





## The Animator's Challenge

From storyboards, synchronized sound, and multiplane cameras, to the first use of color, the color photocopy method, and computer animations, The Walt Disney Studios has invented or utilized technical developments in animation throughout its history.

But interesting as they are, technical advances are only as good as the artists who use them. They give animators the mechanical freedom and flexibility for what they must do in every sketch or final drawing — act!

Each Disney animator is an actor who brings to each drawing a keen understanding of how people and animals feel and express those feelings through movements, gestures, and expressions. Creating believable characters means playing out their roles, just as if the animator were in front of the camera or stage. Excellent artistry and exciting new technical achievements are vital, but they're not enough. Without the animator's ability to capture and convey the full range of a character's emotions, the final result would be beautiful, but without feeling.

But Disney animation has heart. And that is Disney's single greatest contribution to the world of animation — the one that has earned Disney animation an unchallenged place in film history and in the hearts of generations worldwide. From evil witches to devil-may-care bears, beautiful mermaid princesses to courageous mice, flying elephants to operatic whales, Disney characters are much more than lovely drawings on a screen. They're alive and real to those who watch them. It's this quality of life and the indefinable thing called "heart" that is the magic and essence of the art of Disney animation.

## Today — The Role of Computer Animation

As in "Oliver & Company," "The Great Mouse Detective," and "The Little Mermaid," computer animation is being used more and more in animated films to create special effects. Computer animation allows animators the freedom to create one drawing and use that drawing repeatedly to create special effects or to save time that would have been spent redrawing the picture over and over again.

The Animation Studio provides a number of benefits that make home computer animation easy and fun. The Animation Studio lets you create a drawing and then turn it or a section of it into a "brush." Using the brush feature, you can duplicate the image as many times as you like, on the same cel or series of cels, and then rotate, flip, or resize the image. Using standard animation techniques, you would have to redraw the image each time you needed to change its size, placement, or appearance.

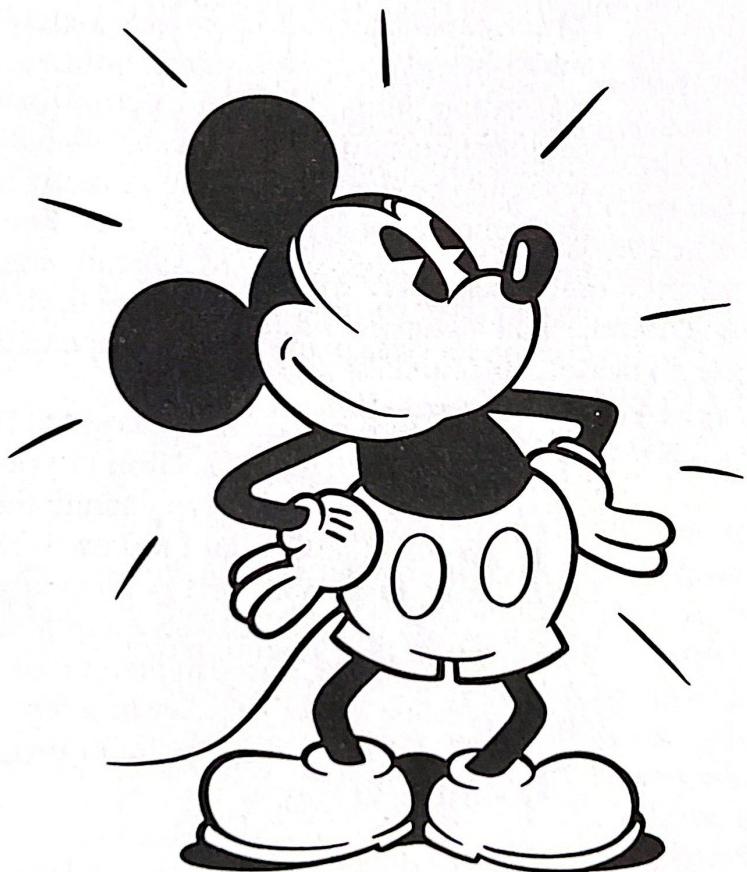
Another feature of The Animation Studio is the ease in which you can change a section of your drawing. If you make a mistake or decide to change the drawing, you can easily erase the section and redraw what you need. When hand-drawn images on cels need changing, animators have to redraw the picture onto an entirely new cel. As a computer animator, you can also make your drawings bigger, smaller, wider or taller in a few easy steps. You can test your animation at any point in progress. Instant color changes are also easy to do.

Simply put, the possibilities are endless with The Animation Studio.



## CHAPTER 2

# The Basics



---

## The Basics of The Animation Studio

This chapter describes the contents and basics of The Animation Studio. The Animation Studio contains four disks:

- *STUDIO*
- *MORGUE*
- *EXTRAS*
- *DEMO-REEL*

The STUDIO disk contains The Animation Studio program and a hard disk installation program. The MORGUE disk contains samples of actual Disney animations called Reference animations. The EXTRAS disk contains fonts, basic sound effects, a library of Sample animations, the Flick program (which lets users run an animation without the actual Animation Studio program), and a picture file format conversion program. The DEMO-REEL disk contains an animation of Donald Duck (in black and white and in color) created specifically for The Animation Studio, and another animation complete with color and sound.



## The Animation Studio Program

The Animation Studio program lets you work with processes similar to those used in the animation industry. The Animation Studio sections are:

- **Pencil Test** — where you create rough black and white animations to work out form and timing
- **Exposure Sheet** — where you set up the sequences of cels that make up your animation and add timing and sound effects (the Exposure Sheet is a part of the Pencil Test program)
- **Ink & Paint** — where you clean up the outlines from the Pencil Test and add color
- **Camera** — where you add backgrounds to your final animations (Camera is a part of the Ink & Paint program)
- **DAS** — a memory-resident supervisor program that lets you switch between Pencil Test and Ink & Paint

To open The Animation Studio program, type **DAS** and press Enter. DAS is a “supervisor” program that lets you transfer to Ink & Paint from Pencil Test, and vice versa. The program opens to the Pencil Test screen.

To load Pencil Test and Ink & Paint without the DAS supervisor program:

CGA, Tandy or MCGA graphics users: Type **PTTM** and press Enter.

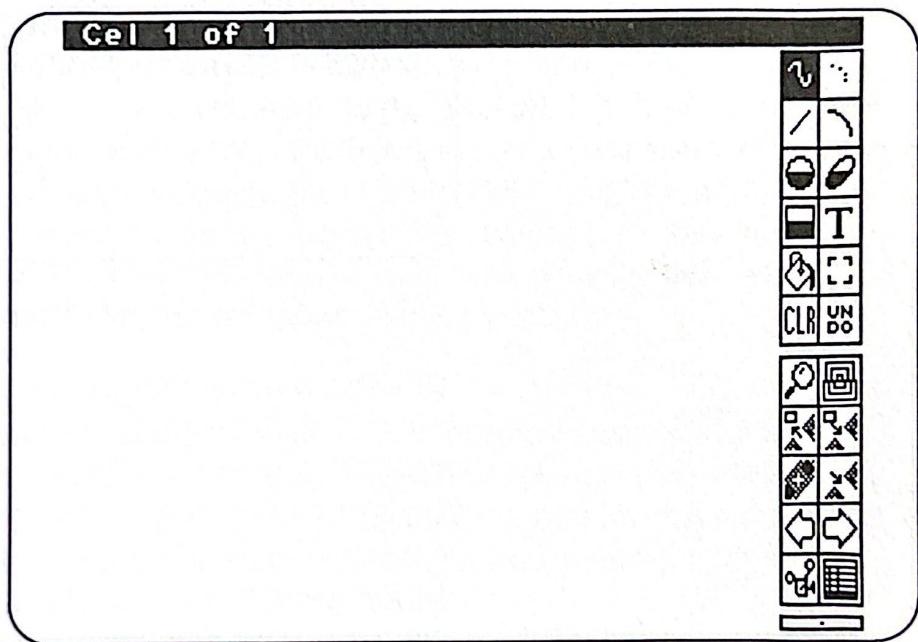
EGA or VGA graphics users: Type **PT** and press Enter.

To start Ink & Paint only, type **IP** and press Enter.

Other loading commands using command line options are also available. For complete details on different ways to load The Animation Studio, see Chapter 2: Installation in the Getting Started manual.

## Pencil Test

The Pencil Test program provides all the tools you'll need to create a black and white animation. The screen looks like:



*Figure 2-1. Pencil Test Screen*

The strip along the top of the screen is called the menu bar. A menu is a list of items that perform an action. The words Cel 1 of 1 appear in white in the menu bar. When you move the pointer onto the menu bar and press the right mouse button, menu titles appear. Menu items appear below each menu title.



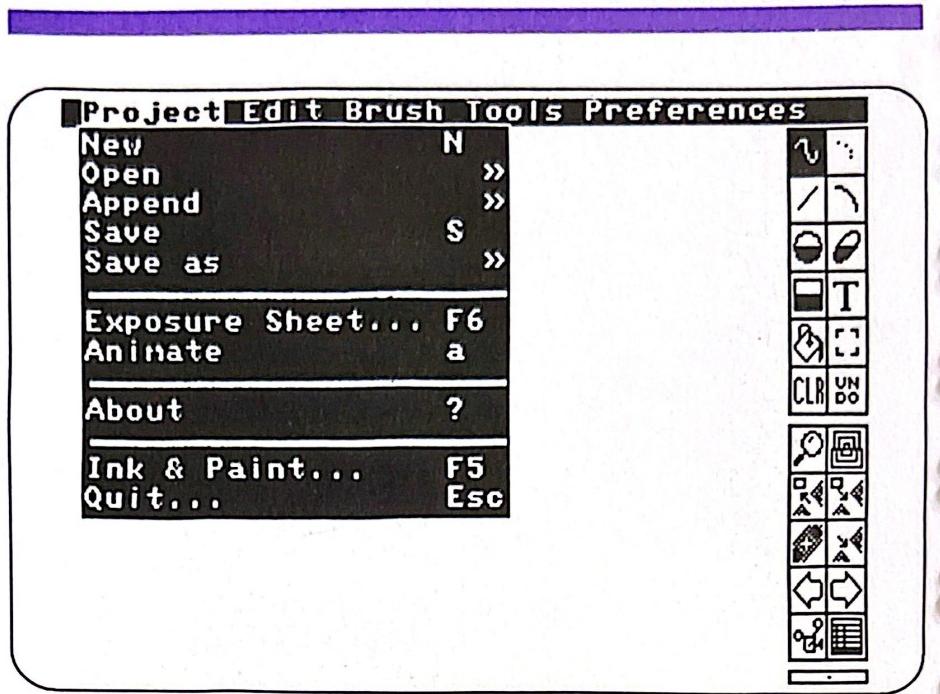


Figure 2-2. Pencil Test Screen with Menu Titles Displayed

To select a menu item, move the highlight bar down to the menu item (by rolling your mouse) and release the mouse button. Some menu items have a double arrow symbol to the right of the menu item; this means that there's a submenu for that option. To select from a submenu, drag the mouse pointer to the right and down to highlight a submenu item; then release the mouse button to select that submenu item. Some menu items display requesters, which are windows that require input from you. Each of the Pencil Test menus, submenus, and requesters are described in detail in the Pencil Test chapter.



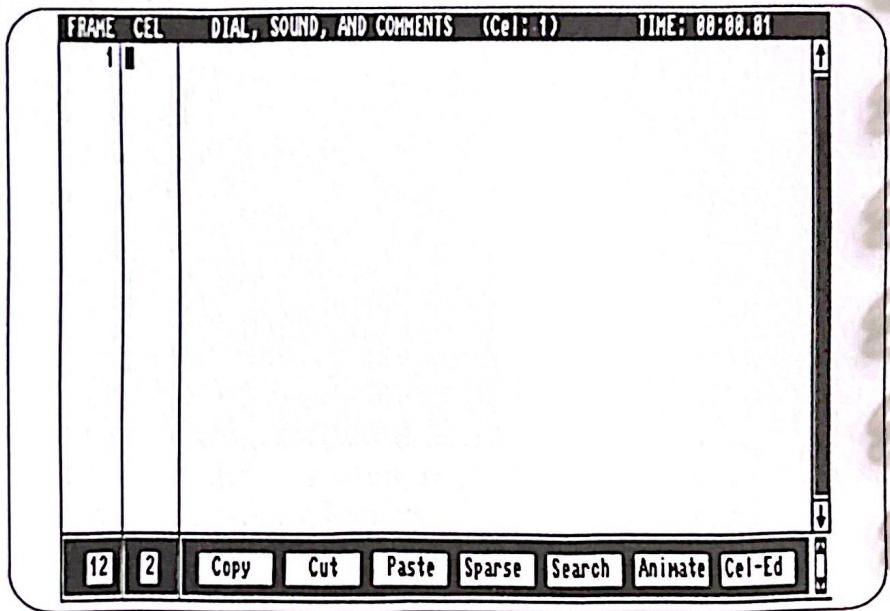
The Toolbox is the collection of symbols along the right side of the screen. The symbols in the Toolbox represent commonly used drawing tools that let you create, edit, and test your animation. To select a tool, simply move the pointer over it and click the left mouse button. You can hide the Toolbox and menu bar while working on your animation by pressing the F10 key. F10 toggles the Toolbox and menu bar off and on. Each of the Pencil Test tools are described in the Pencil Test chapter.

The large white area that takes up most of the screen represents a cel. A cel in the animation industry is a single piece of artwork, usually drawn on a clear piece of acetate, celluloid, or onion skin paper. The cel in The Animation Studio best imitates onion skin paper. It lets you view a layer of drawings (up to four cels), with the cel “on top” appearing darker than those beneath it.

## Exposure Sheet

In traditional animation, the exposure sheet is a guideline by which the animators set up timing and the order of events. The Animation Studio Exposure Sheet uses specific commands to control the timing and sounds, as described in Chapter 4: Exposure Sheet.

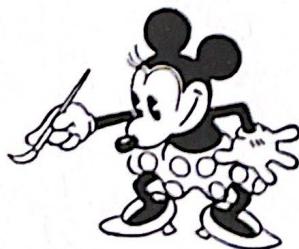




*Figure 2-3. Exposure Sheet Screen*

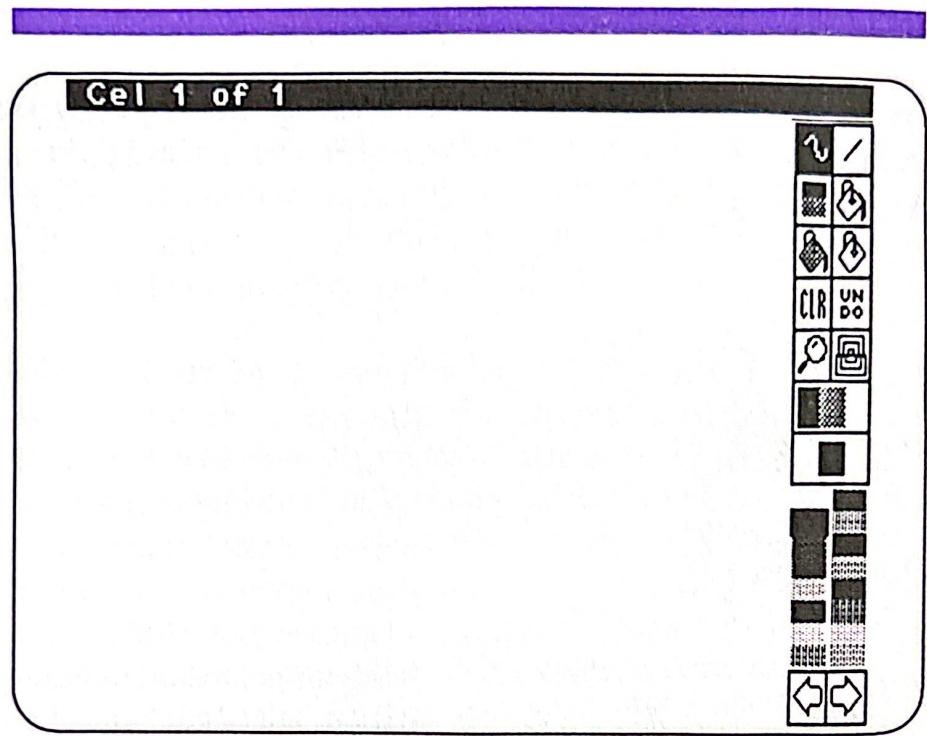
You can access the Exposure Sheet through the Pencil Test Project menu, the Exposure Sheet icon in the Toolbox, or by pressing the F6 key.

## Ink & Paint



The Ink & Paint section of the program lets you add color and backgrounds to your animation. You can access this section through the Pencil Test Project menu if you loaded the program through the DAS supervisor program, or you can load it from DOS by typing **IP** and pressing Enter.

The Ink & Paint section displays a window similar to the Pencil Test window.

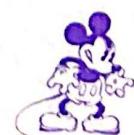


*Figure 2-4. Ink & Paint Screen*

Notice that the menu bar and Toolbox in the Ink & Paint section are similar to those in the Pencil Test section. The color palette, located below the Toolbox, lets you select colors for your animation and create other effects using the Ink & Paint options. There is no onion skin effect in Ink & Paint.

## Camera

The Camera function lets you merge Pencil Test animations with backgrounds created in The Animation Studio as well as other paint packages. You'll find complete information on the Camera function in Chapter 5: Ink & Paint.



## Mouse and Keyboard Functions



This section describes the functions of the mouse and keyboard. The left and right mouse buttons perform different functions.

Use the left mouse button to:

- Draw (in Ink & Paint, you'll draw in the current color of the pen)
- Select tools from the Toolbox
- Select a drawing or sections of a drawing as a brush (without erasing anything on the cel)
- Select items or add information to a requester (a requester is a window that requires input from you)
- Stop an animation and return to the cel you were on when you began animating

Use the right mouse button to:

- Draw in white in Pencil Test
- Draw with the background color in Ink & Paint
- Display menu titles in the menu bar
- Pull down the menus from the menu bar
- Select menu items
- Select a drawing or sections of a drawing as a brush (erasing from the cel the part that will become the brush)
- Stop an animation on the current cel

You can access most of the mouse and menu item options through keyboard commands. Once you become more familiar with The Animation Studio, using keyboard commands can be a faster and more efficient way to create animations. Menu options that are not currently available are "ghosted" out; you will not be able to select them.

In both the Getting Started and User's Guide manuals, keys that you must press simultaneously are hyphenated (i.e., Shift-k, Alt-b). Keys that are not hyphenated are single keys; for instance, F1 is the F1 key, not the letter F and number 1 press simultaneously.

The Tools menus in both the Pencil Test and Ink & Paint sections list the tools and their corresponding keyboard commands. Refer to Appendix C: Keyboard Commands for a quick reference list of tools and their corresponding keyboard commands.

## **Requesters and Text**

### **Edit Fields**

A requester is a window in which you can enter text or select certain items. To enter text in an edit field, click on that edit field (the rectangular box), type the text, and then press Enter. If there is already text in the box, you can press Ctrl-x to erase all the text. You can also press the Backspace or Delete key to erase letters.



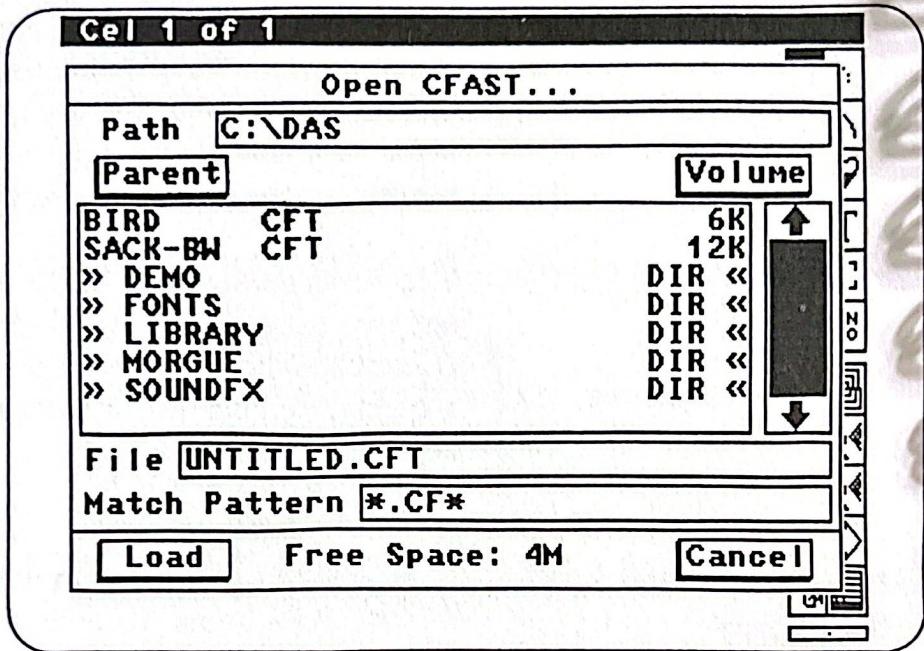


Figure 2-5. Requester with Edit Fields

You can move the on-screen positions of the Palette and Frisket requester in Ink & Paint by clicking the left mouse button at the top of the requester window. While keeping the mouse button pressed down, roll the mouse in any direction to move the window.

## The Help Screen

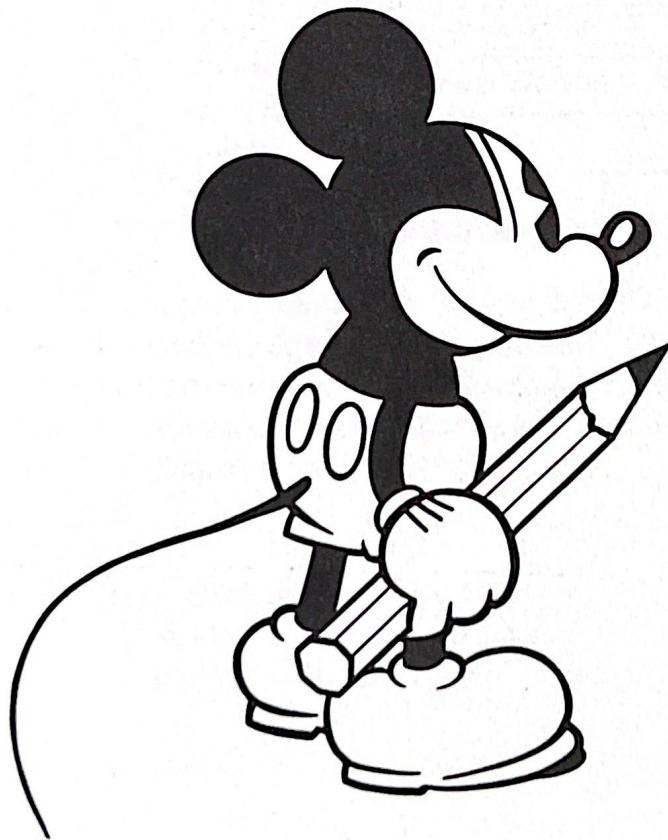
A Help Screen is available in all sections of The Animation Studio. In Pencil Test and Ink & Paint, you can press Alt-h on the keyboard to open a window that lists the function key commands. In the Exposure Sheet, pressing Alt-h lists the Control and Sound commands.





## CHAPTER 3

# Pencil Test



---

## Pencil Test

The Pencil Test section includes all the tools you'll need to create, edit, save, and run a black and white animation. This chapter describes the Pencil Test menus, tools, and operations required to:

- *Create rough drawings*
- *Use the onion skin effect to create animations*
- *Run and test your animation*

The Pencil Test program section also lets you create an Exposure Sheet to arrange the timing of cels and incorporate sound effects for your animation. Chapter 4: Exposure Sheet covers this subject in detail.

---

## Pencil Test Menus

To open The Animation Studio program, type DAS and press Enter. DAS is a "supervisor" program that lets you transfer to Ink & Paint from Pencil Test, and vice versa. The program opens to the Pencil Test screen.



To load Pencil Test and Ink & Paint without the DAS supervisor program:

CGA, Tandy or MCGA graphics users: Type **PTTM** and press Enter.

EGA or VGA graphics users: Type **PT** and press Enter.

For complete details on installing The Animation Studio, see Chapter 2: Installation in the Getting Started manual.

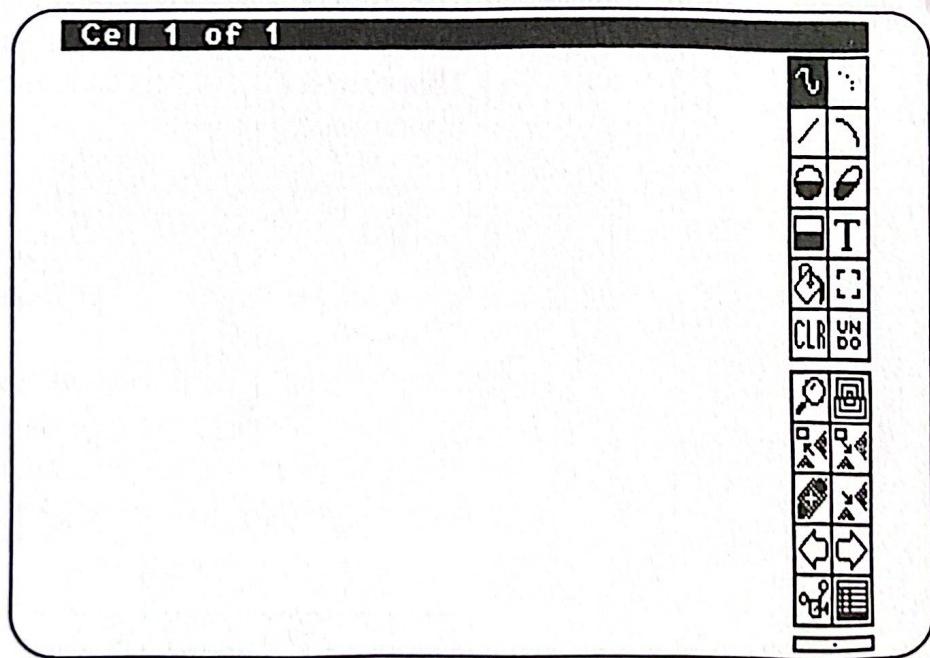


Figure 3-1. Pencil Test Screen

The menu bar along the top of the cel editor reads Cel 1 of 1 showing the current cel or "page" number. To see the Pencil Test menu titles, move the mouse pointer to the menu bar and hold the right mouse button down.

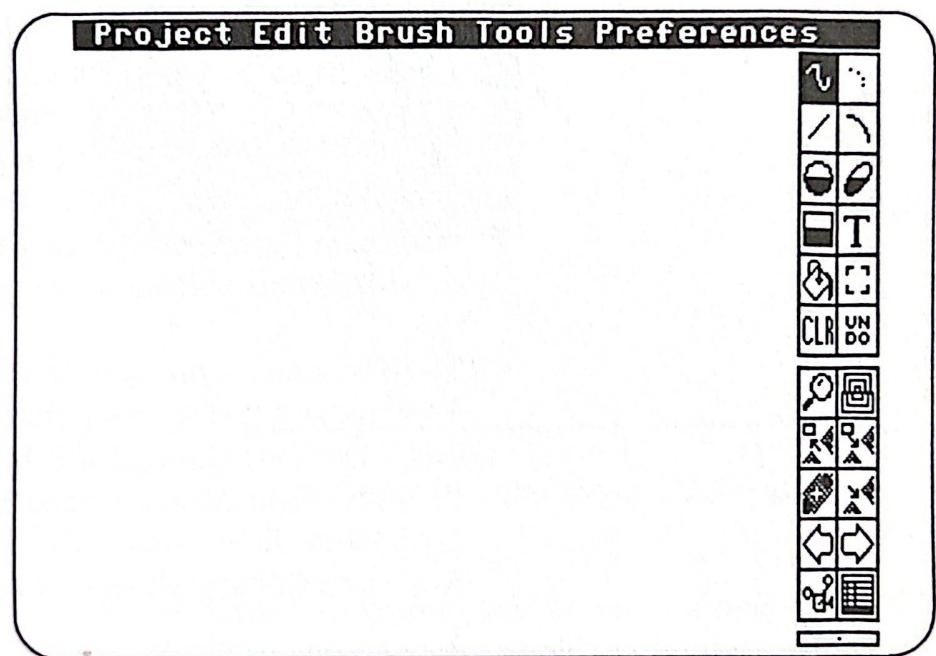


Figure 3-2. Pencil Test Menu Titles

The Pencil Test menus are:

- *Project*
- *Edit*
- *Brush*
- *Tools*
- *Preferences*



---

The Project menu lets you perform file operations like opening and saving files, entering the Exposure Sheet and Ink & Paint portion of the program, running your animation, and quitting the Pencil Test program when you're done.

The Edit menu lists the functions available to edit your animation. The keyboard commands are also provided in the menu listing. The Brush menu lists the options available when you're working with a brush image. You can rotate, resize and flip the image, as well as load brushes from other software packages.

The Tools menu provides a listing of the items in the Toolbox and their corresponding keyboard commands. You can select tools through the Tools menu, the Toolbox on the Pencil Test screen, or corresponding keyboard commands. Refer to the Tools menu or Appendix C: Keyboard Commands to learn the keyboard commands.

The Preferences menu lets you select the graphics mode, select the resolution of the display, set the frame rate for the animation, display a coordinate system on screen, and turn the Toolbox off and on.

The following sections describe each of the menus in detail.

---

## Pencil Test Project Menu

To access the Project menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button and highlight Project. Move the pointer down to highlight the menu item you want and then release the mouse button to select it.

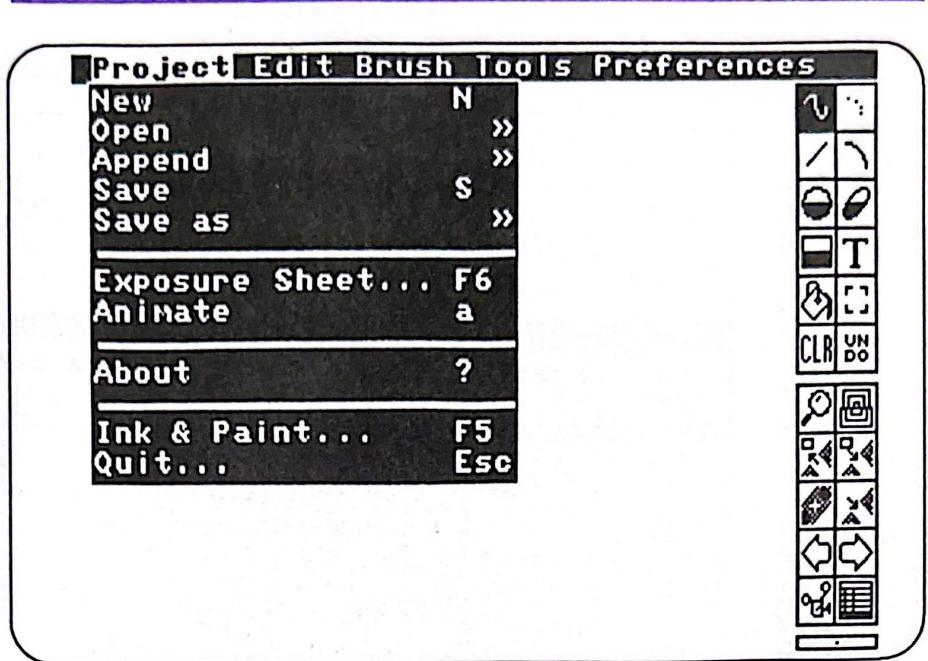


Figure 3-3. Pencil Test Project Menu

## New

Select New to clear all current cels and start a new animation. Before the cels are cleared, a requester asks if you're sure.



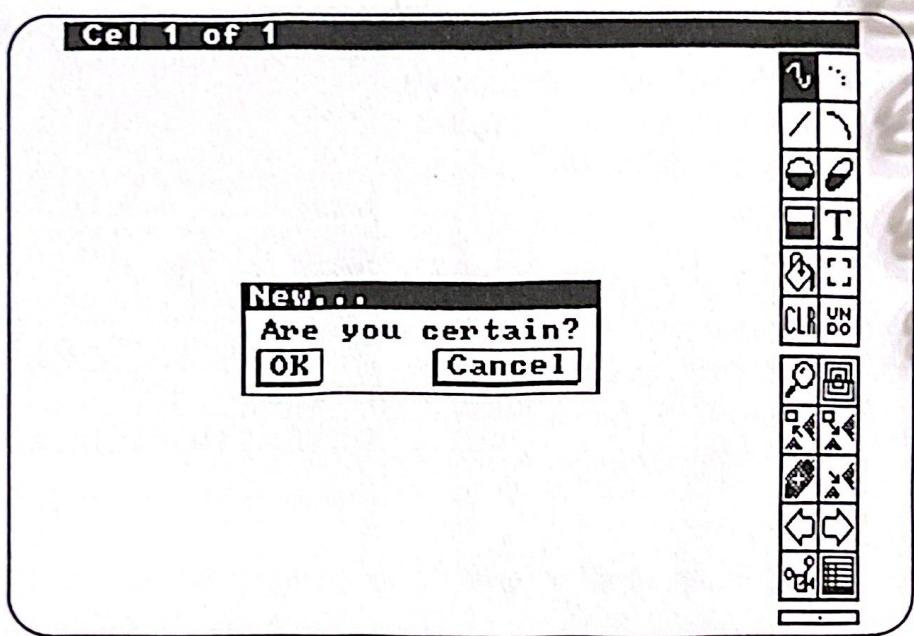


Figure 3-4. Project Menu New Requester

To begin a new animation, click on OK with the left mouse button. If you want to continue working on the current cels, select Cancel. If you created a drawing, used the Exposure Sheet, and then decide to clear the cels, another requester asks if you want to delete the Exposure Sheet.

Keyboard command: Shift-n

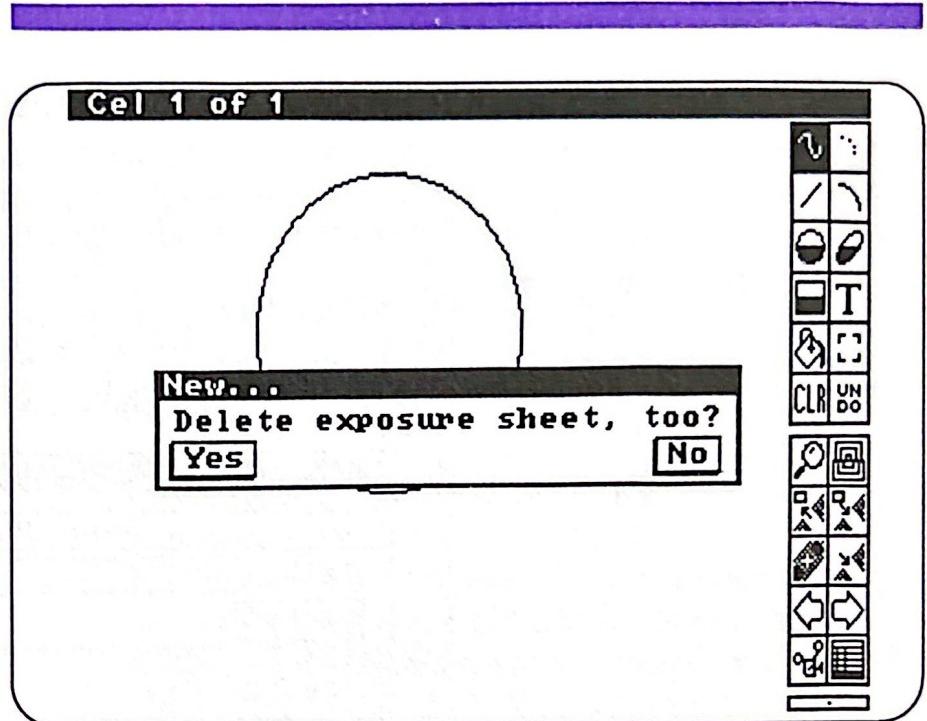


Figure 3-5. Delete Exposure Sheet Requester

## Open

Open loads an animation into The Animation Studio. The animation can be one of three formats:

- *IFF*
- *Anim*
- *CFast*

Many paint packages use the IFF (Interchange File Format) file format. Files ending with the .LBM file extension are IFF files. IFF and Anim files are standard file formats used in other software packages that you can open and use in The Animation Studio. Once you open these files in The Animation Studio, you can save them as CFast files, a file format used in The Animation Studio. Files created or brought into The Animation Studio can be saved as CFast files, Anim files, or as a series of IFF files. Each file format is described in Appendix B: File Operations.



The Open command will clear a current animation before loading a new one.

Keyboard command: o (to open CFast file)

### Opening a File

When you select Open and the file format from the submenu, the File requester displays:

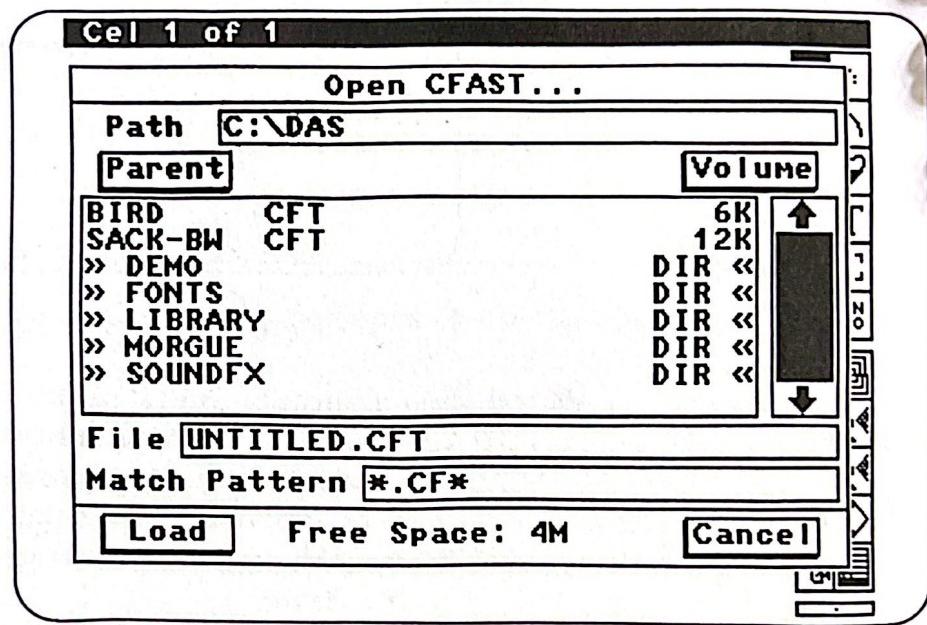


Figure 3-6. File Requester

The top bar of the requester tells you the file type. For example, if you selected Open >> CFast, the top bar reads "Open CFast..." The next line down displays the current path. The Path edit field defaults to the drive that the program is in. If you installed the program onto your C: drive using The Animation Studio's Install program, the path should begin with C:\DAS. For detailed information on the DOS file structure, refer to your DOS manual.

The box in the center of the requester displays the files, directories, and disk volumes currently available on the system. This listing varies depending on the disk(s) you've loaded in the drive(s) and any information on the system's hard disk. The size of each file is provided to the right of the file name.

You can open a file in three ways:

- *Double-click on the file name in the center listing of a requester box.*
- *Type the file name into the File edit field and click on Load or press Enter. If you make a mistake while typing, use the Backspace or Delete key, or press Ctrl-x to erase the edit field.*
- *Select the file name by clicking on it, and then click on Load.*

### **Parent and Volume**

The Parent and Volume boxes let you move around on your disk to locate files and directories. Clicking on Parent takes you up the file structure. Clicking on Volume lets you see which volumes (disks) are available on your system.

### **Match Pattern**

In order for a file to be displayed, the file must have a file extension that matches the one shown in the edit field next to Match Pattern. The file extensions for files that The Animation Studio recognizes are .LBM, .ANM, and .CF\* (\* is normally T for a Pencil Test file or C for an Ink & Paint file; it can also remain an asterisk to search any number or letter).

If the file you want to load does not have a file extension that matches the one next to Match Pattern, you have several options:



- Change the extension to \*.\* (asterisk, period, asterisk). This forces the program to acknowledge all files in that subdirectory. Click in the edit field and press Ctrl-x to erase all the characters; then type \*.\* and press Enter.

The asterisk is a “wildcard” symbol that represents all characters. For instance, typing \*.LBM means you want to see any file that ends with the .LBM file extension. Typing POGO.\* means you want to see all files named POGO that end with any file extension. Typing P\*.\* means you want to see all files that start with the letter P and end with any file extension. The \* is a flexible variable.

- Change the extension in the Match Pattern edit field to match the one in your file name. For example, if you want to view all IFF files that end with the file extension .XYZ, you'd click in the Match Pattern edit field, press Ctrl-x to delete the current information, and then type \*.XYZ and press Enter.
- Rename the file you want to open through DOS using the REN (Rename) command. At the DOS prompt, type REN followed by the original file's name and then a new name. Let's say you need to add an .LBM file extension to a file called POGO. You would type REN POGO POGO.LBM and then press Enter (make sure there's a single space after the REN command and between the file names). The file POGO is now renamed POGO.LBM and can be identified by The Animation Studio. This is one example of a DOS Rename command. Consult your DOS manual if you need additional information on renaming a file.

Subdirectories always appear in the center file listing, no matter what characters appear in the Match Pattern edit field.

It's a good idea to check the amount of memory you have before you load a file. You can check the amount of available memory by pressing the F1 key while in Pencil Test and Ink & Paint.

### **Loading IFF Files**

When loading IFF files, click on the **first** file name in the subdirectory; this loads the file and all the subsequent IFF files (those that have an .LBM file extension). Be sure to click on the first file name in the subdirectory to load all the IFF files in that subdirectory; if you click on the third file name of an IFF series, all the files in that series will load except for the first two.

### **Loading a File of Different Resolution**

The Animation Studio automatically loads animations of any resolution. The only limitation is your graphics capability. When you load a cel that's in a resolution different from the current monitor resolution, a requester gives you the option to either change the resolution of the screen or load the file into the current resolution. Pictures loaded from one resolution to another may appear slightly distorted.

## **Append**

Append is like the Open command except that Append doesn't clear the current cels before opening a selected file. Use Append when you want to combine two or more animations into a single animation. The file you select through the requester is added to the end of the current cels. In addition, the Exposure Sheet of the selected file is added to the end of the current Exposure Sheet. The appended information is automatically renumbered.



## Save

This saves the current animation on disk. The Save command assumes that you've previously named the file through either the Open or Save As commands and that it should save the file under that name. If this is an unnamed file, you're asked if it's OK to save the current file as UNTITLED.LBM. To give the file a name other than UNTITLED.LBM, select Cancel to exit the Save requester. Then select Save As from the Project menu and enter a different name.

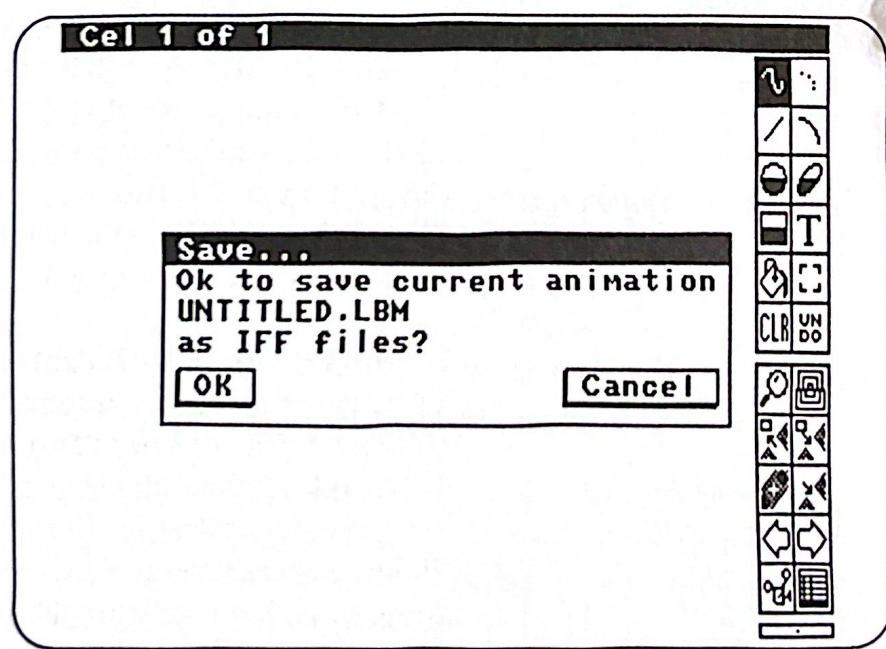


Figure 3-7. Save As Untitled Requester

Once a file has a name, selecting Save saves the latest changes or additions to the file, and saves the file in the format previously specified.

Keyboard command: Shift-s

## Save As

This command saves a new animation or saves an animation under a new name. You can save an animation as an IFF, Anim, or CFast file.

- Use IFF file format to save each cel in an animation as an individual file. This allows other paint programs to open each cel individually since they're saved in their own files. IFF files are saved with the .LBM file extension.
- Anim is an Amiga file format. Use Anim file format to save files that you will want to use in other programs that acknowledge this file format. Anim files are saved with the .ANM file extension.
- CFast is an efficient file format specially designed for The Animation Studio. In most cases, you will want to select the CFast file format to save the animation as a single file for use with The Animation Studio. CFast Pencil Test black and white files are saved with the .CFT file extension. CFast Ink & Paint color files are saved with the .CFC file extension.

When you select a file format, the Save As requester appears. If the current file has never been saved before, UNTITLED appears in the file name box (with the file extension of the type of file you chose to save it as). Position the pointer in the file name box on the "U" in UNTITLED and click the left mouse button; a black box appears. Press the Delete key until the word UNTITLED is erased. Then type in a new file name. Make sure that your file has the correct file extension; this allows The Animation Studio to identify the file.

The requester displays the file format at the top of the requester.



Before saving the file, check the space available on your work disk to make sure there's enough space to save the file. The amount of free space is displayed at the bottom of the requester.

Keyboard command: w (to save as Cfast)

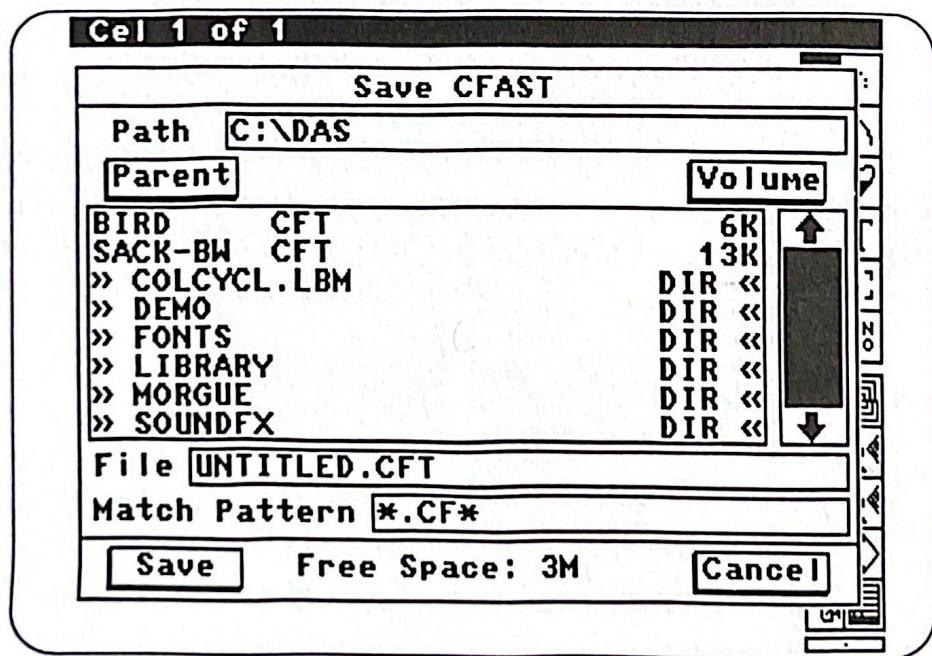


Figure 3-8. Save As Requester

## Exposure Sheet

This command opens the Exposure Sheet. The Exposure Sheet lets you plan the timing of the animation, arrange the sequence of cels, and incorporate sound effects. The Exposure Sheet is automatically attached to the animation once the Exposure Sheet is created. Refer to Chapter 4: Exposure Sheet for detailed information.

Keyboard command: F6

## Animate



Animate plays the cels in sequential order. The animation continues to play until you press one of the mouse buttons. Pressing the right mouse button stops the animation on the current cel. This is very useful when you're testing an animation and trying to fix any problems. Pressing the left mouse button stops the animation and returns to the starting cel. For instance, if you start on cel 5, select Animate, and press the left mouse button, the animation stops and returns to cel 5. If you press Shift-a, the animation runs according to the Exposure Sheet:

### Keyboard commands:

a	Run animation
Shift-a	Run animation according to Exposure Sheet

## Ink & Paint

Select this to enter the Ink & Paint program (this option is only available if you loaded Pencil Test by typing DAS).

Keyboard command: F5

## About

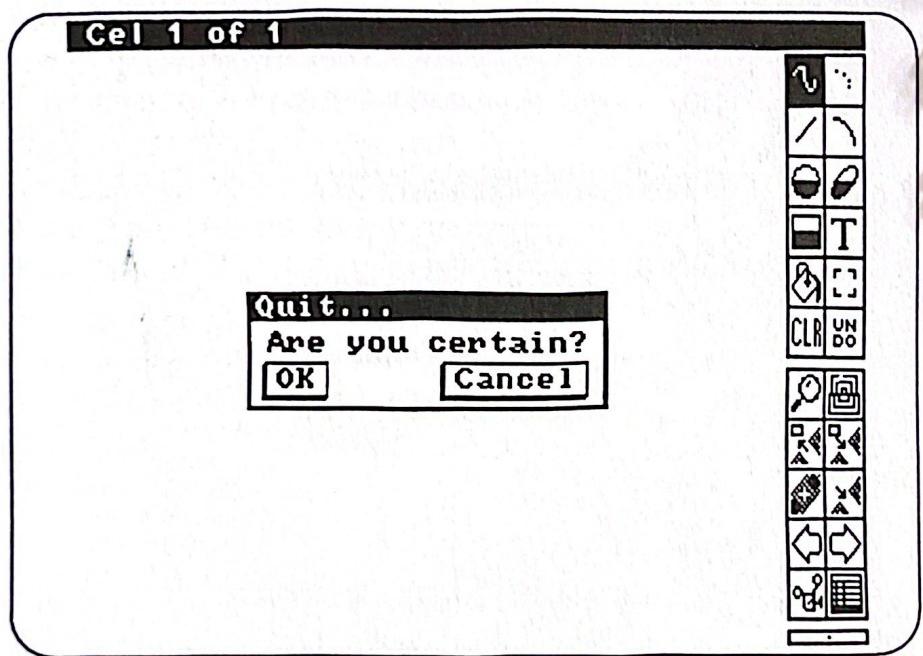
About displays the software version number and copyright information.

Keyboard command: Shift-/ or ?



## Quit

Quit exits the program and returns to DOS. A requester appears:



*Figure 3-9. Quit Requester*

Select OK to quit the program. Select Cancel to remain in the program and in the current file.

Keyboard command: Esc

---

## Pencil Test Edit Menu

To access the Edit menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button and highlight Edit. Move the pointer down to highlight the menu item you want and then release the mouse button to select it.

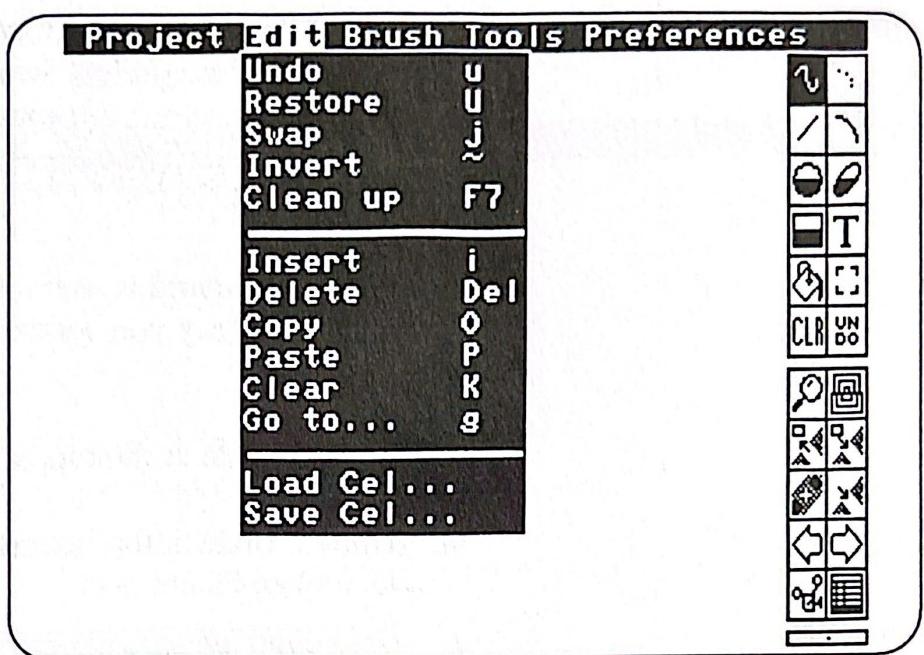


Figure 3-10. Edit Menu

## Undo

Select Undo to erase your last action. For example, let's say you draw a large circle and then draw a smaller circle inside the larger circle. If you select Undo, the smaller circle disappears. You can undo all drawing commands as well as the Undo command.

Keyboard command: u

## Restore

Restore returns the cel to its original state (which is how it appeared before you made any changes). Restore erases all changes made to a drawing, while Undo only erases the last change made. Restore must be used before you go to another cel or run the animation.

Keyboard command: Shift-u



## Swap

Swap exchanges the current cel with the cel stored in the swap screen. If you select Swap when the swap screen is empty, a blank screen appears. You can select Swap repeatedly to alternate between the original cel and the swap screen.

The Swap command is useful for creating in-between drawings. Let's say you wanted to draw a falling ball. You could:

1. Draw a circle at the top of cel 1.
2. Draw a circle at the bottom of cel 2. The screen now looks like Figure 3-11.

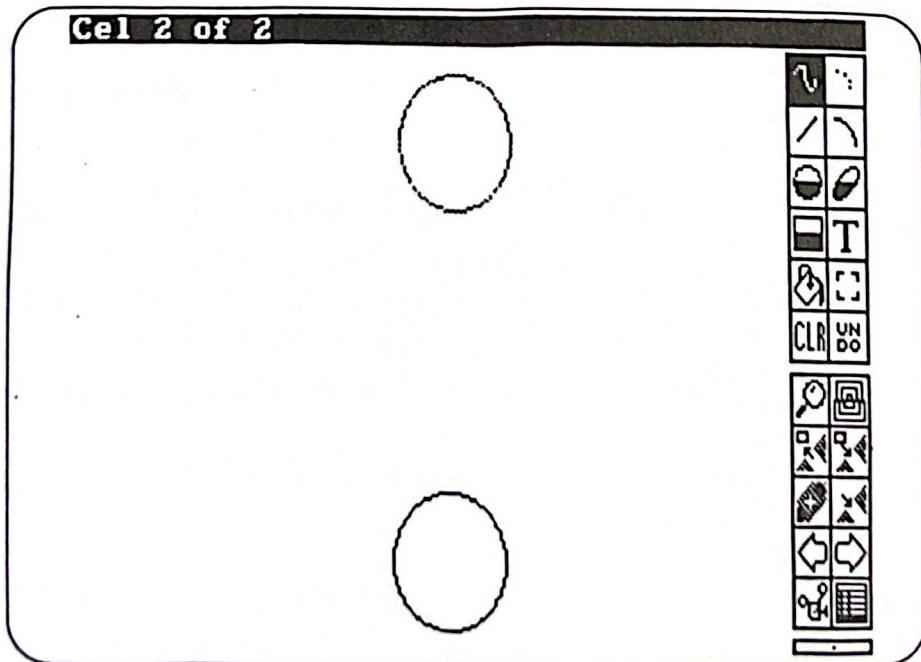


Figure 3-11. Cels 1 and 2 of Swap Example

3. Move to cel 3. Notice that you can see the first two cels clearly because of the onion skin effect.

4. Create the middle circle on cel 3. The screen now looks like Figure 3-12.

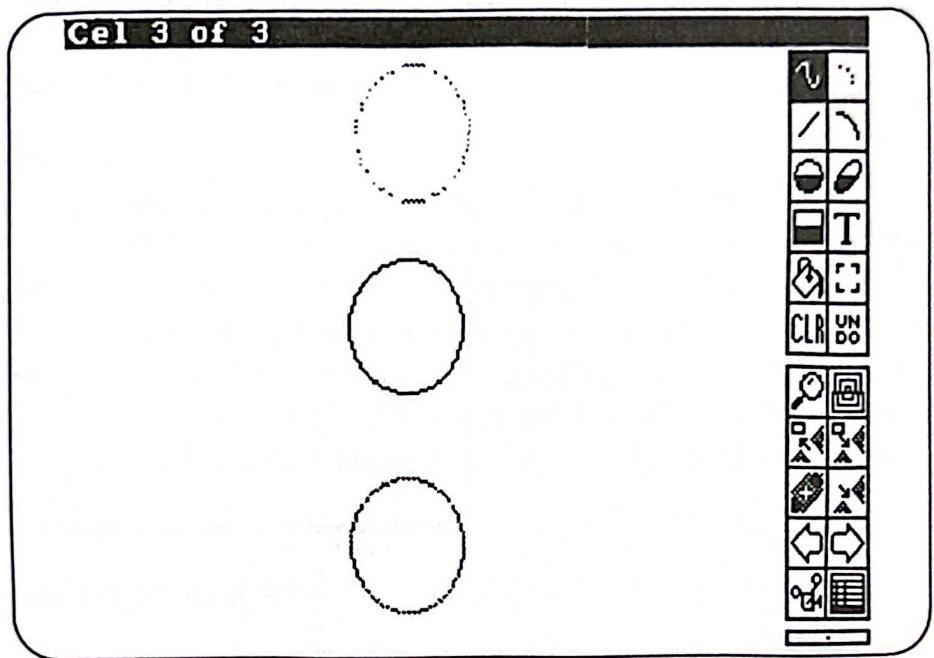
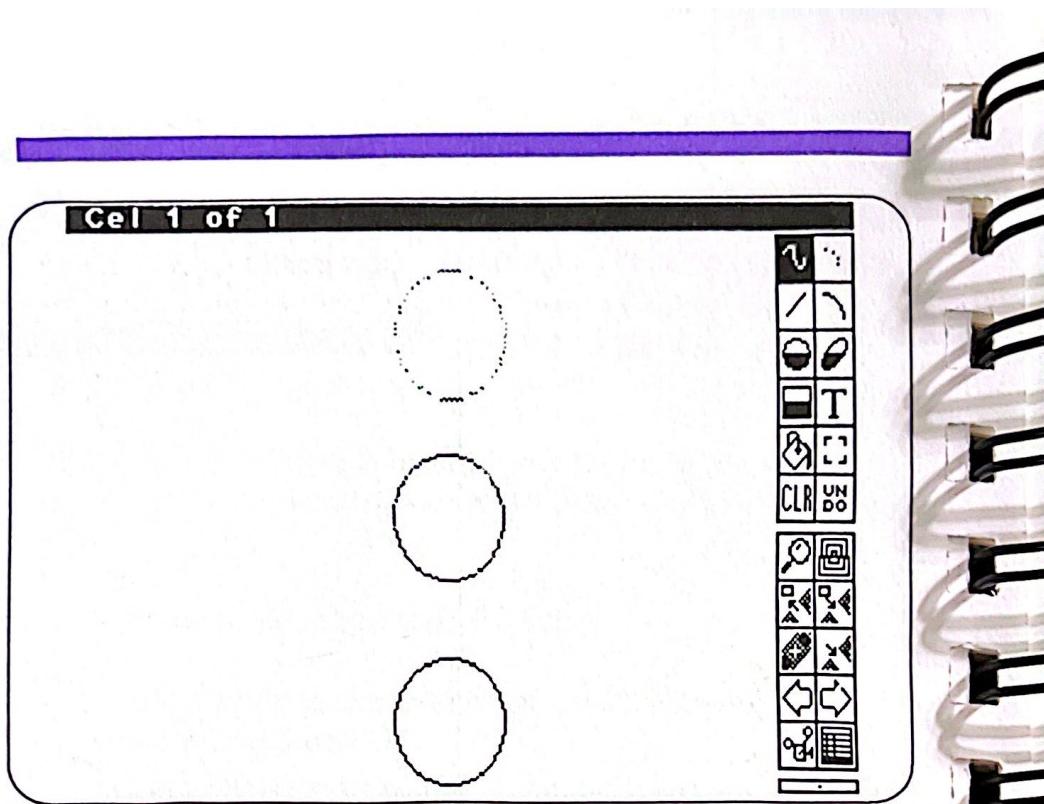


Figure 3-12. Cels 1, 2, and 3 of Swap Example

The sequence of cels is out of order. You need to swap the positions of cels 2 and 3.

5. Select Swap from the Edit menu. The circle drawn on cel 3 is exchanged with the Swap screen so cel 3 now looks blank.
6. Move back to cel 2. Select Swap from the Edit menu. The middle circle appears and is now recognized as cel 2.
7. Move to cel 3 and select Swap again. Cel 3 is now the bottom circle and the circles should be in the correct order. The screen now looks like Figure 3-13.





*Figure 3-13. Complete Swap Example*

Use this technique to create in-between drawings for your animation.

Keyboard command: j

## Invert

Invert reverses the black and white pixels in the current image or animation. This option is useful when loading Anim files from other applications, which load inverted (white on black). Select Invert to restore the animation to its original state. Invert is also useful for creating special effects such as night scenes.

Keyboard command: ~

## Cleanup

Cleanup removes any stray, single black pixels from the current cel. Digitized images often have stray pixels. This command easily removes them.

Keyboard command: F7

## Insert



Insert adds a blank cel to your animation. If you select Insert in the middle of a series of cels, a new cel is inserted at the current cel number, “bumping” the additional cels forward. For example, if you’re currently on cel 2 of a sequence of three cels and you select Insert, a blank cel is inserted as cel 2. Cel 2 becomes cel 3, and cel 3 becomes cel 4. The Exposure Sheet is automatically updated when you select Insert.

Keyboard command: i

## Delete

This command deletes the current cel from the sequence of cels. If the current cel is used in the Exposure Sheet, you’re asked if you want to delete this cel from the Exposure Sheet. If you select OK, the current cel is deleted, the Exposure Sheet is updated, and the sequence of cels is updated.

The number of frames in your Exposure Sheet will remain the same so the timing of your animation remains the same. The cel previous to the one you just deleted is copied to the deleted cel’s frame, and then the following cels are renumbered. If you want to delete the frame from the Exposure Sheet as well, go to the Exposure Sheet, click on the repeated cel in the Cel column, and then click on the Cut button at the bottom of the Exposure Sheet screen.

Keyboard command: Delete (Del)



## **Copy**

Copy makes a duplicate of the current cel. The copy of the current cel is then stored in memory. This option is normally used with the Paste option.

Keyboard command: Shift-o

## **Paste**

Paste replaces the current cel with the cel in memory (refer to the Copy command). If the current cel has a drawing on it, the drawing is erased and the pasted cel appears.

Copying a cel, advancing one cel, and then pasting the cel down is a simple way to create progressive animations. A progressive animation is one that's consistently added to. For example, if you had a tree that you wanted to add leaves to over a series of cels, you could create a drawing of a tree, copy it, and repeatedly paste it as you move forward through a sequence of cels. By using this technique you don't have to redraw the entire tree over and over again.

Keyboard command: Shift-p

## **Clear**

Clear erases the drawing on the current cel. The cel number and sequence remain the same.

Keyboard command: Shift-k

## **Go To**

Go To lets you quickly move to any cel. When you select this command, a requester appears; select the cel you want to go to by typing the cel number in the top box or by sliding the horizontal scroll bar at the bottom of the requester using a mouse and then clicking OK.

Keyboard command: g

## **Load Cel**

This command loads a single IFF picture. Enter the file name of the IFF picture you want to load at the requester. This feature is useful in loading a background picture into Pencil Test. Use the background image as a guide while creating the animation. When a background is loaded into Pencil Test, it appears as a black and white image (Note: If you're loading an Ink & Paint cel, colors may be changed). You can place this image on the swap screen (by pressing the j key), and then follow the swap screen technique to use the background as a reference (The swap screen technique is described in this section under "Swap" and in Chapter 6: Putting It All Together). If there's already an image on the cel and you select Load Cel, the selected image replaces the cel image.

## **Save Cel**

This command saves the current cel as a single IFF file. You can use this picture as a background image, and later load it into The Animation Studio as a reference image using the swap screen technique described under Load Cel.

If you used Load Cel to load and modify a picture and then you want to save it, choose Save Cel from the Edit menu to resave it. Do not use Save or Save As from the Project menu.



## Pencil Test Brush Menu

To access the Brush menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button and highlight Brush. Move the pointer down to highlight the menu item you want and then release the mouse button to select it.

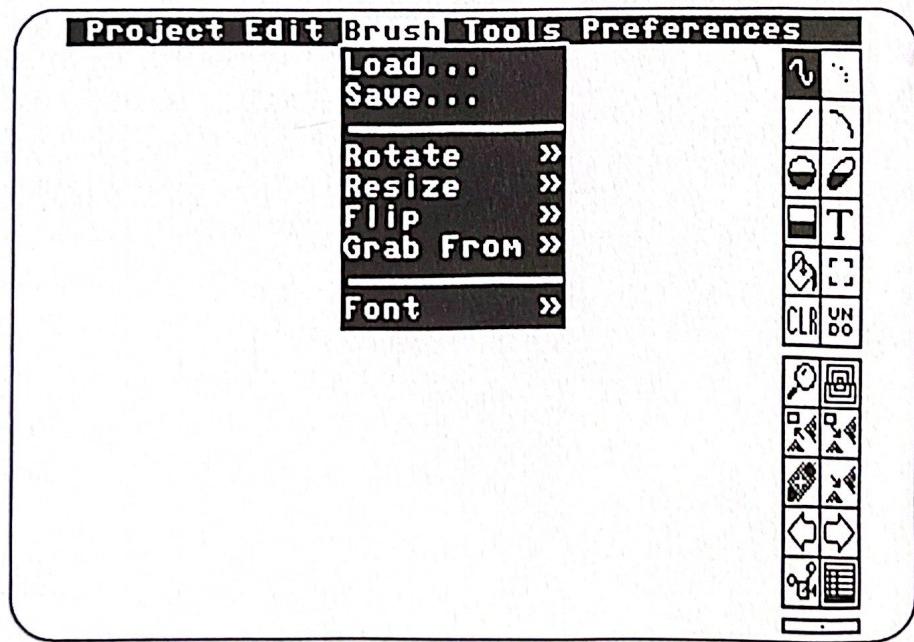


Figure 3-14. Brush Menu

### Load

This command loads previously saved IFF brushes, which have .BBM file extensions. Use Load to bring in a brush image that you want to use in the current Pencil Test animation.

## Save

This command saves the current brush image. You're asked to assign a file name to the brush image. Once you save the brush you can use it in other animations and cels by using the Load command from the Brush menu.

## Rotate

Use this to rotate a selected brush by 45°, 90°, or any other angle. The preset 45° and 90° rotations are provided to make it easier for you to rotate a selected brush. The 45° command does not continually rotate the brush image by 45° increments; you need to alternate with the 90° command to continually rotate the image.

Any Angle lets you rotate the brush any degree. When you select Any Angle, the brush appears with a box around it. Hold either mouse button down and move the box to the angle you want (you will only see the box, not the brush), and then release the mouse button to set the brush at that angle.

Keyboard commands:

Shift-4 or \$      Rotate 45°  
Shift-9 or (      Rotate 90°

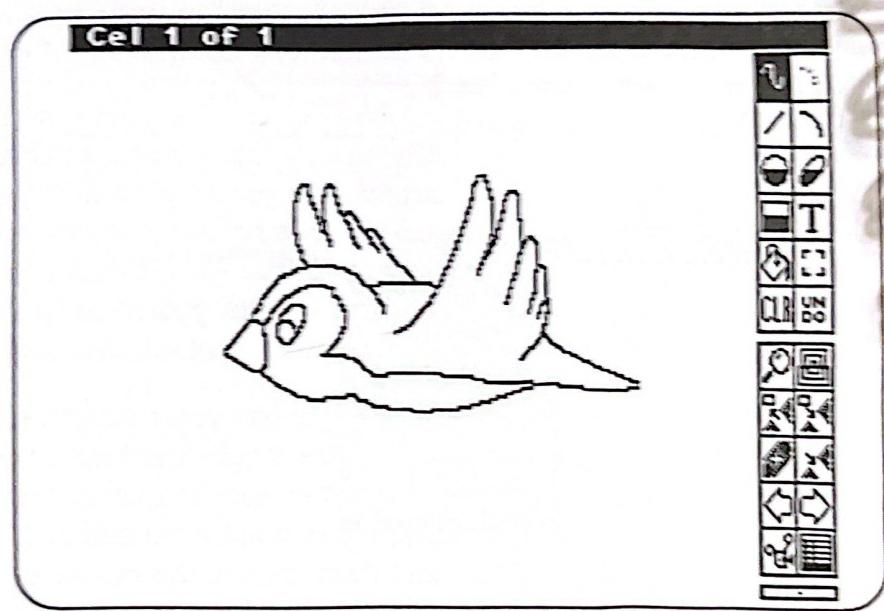
## Resize

Select this to resize the selected brush. The Resize option offers these submenu choices: Halve, Double, Wider, Taller, and Size.

When you resize a brush to a smaller size, some pixels may be lost in this process. The amount of pixels you lose depends on how much you reduce the brush.



We'll use the following brush image to illustrate each of the submenu options:

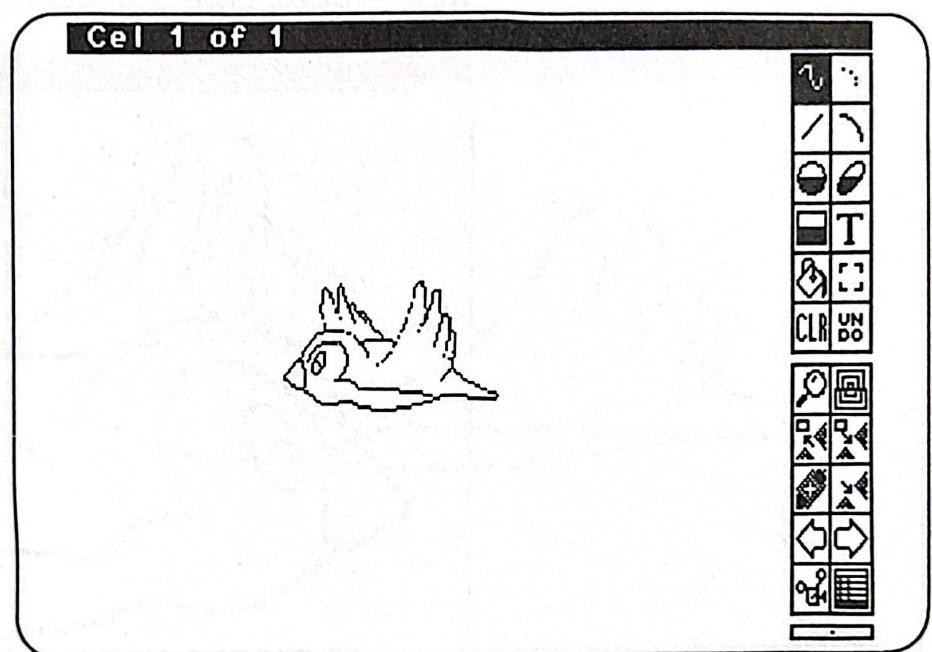


*Figure 3-15. Brush Image*

## **Halve**

Halves the brush image horizontally and vertically.

Keyboard command: h



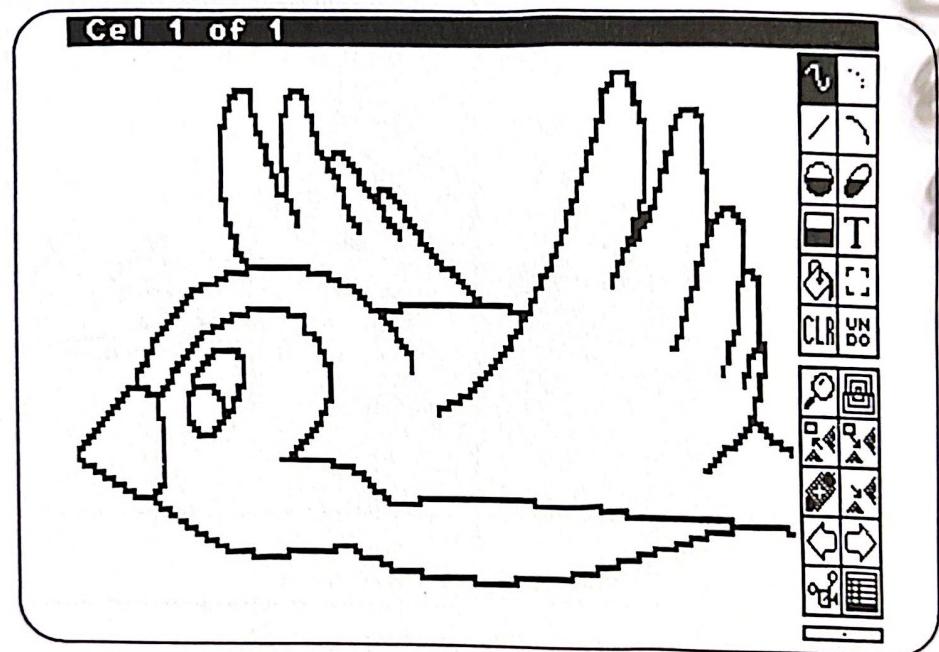
*Figure 3-16. Halved Image*



### **Double**

Doubles the size of the brush image horizontally and vertically.

Keyboard command: Shift-h

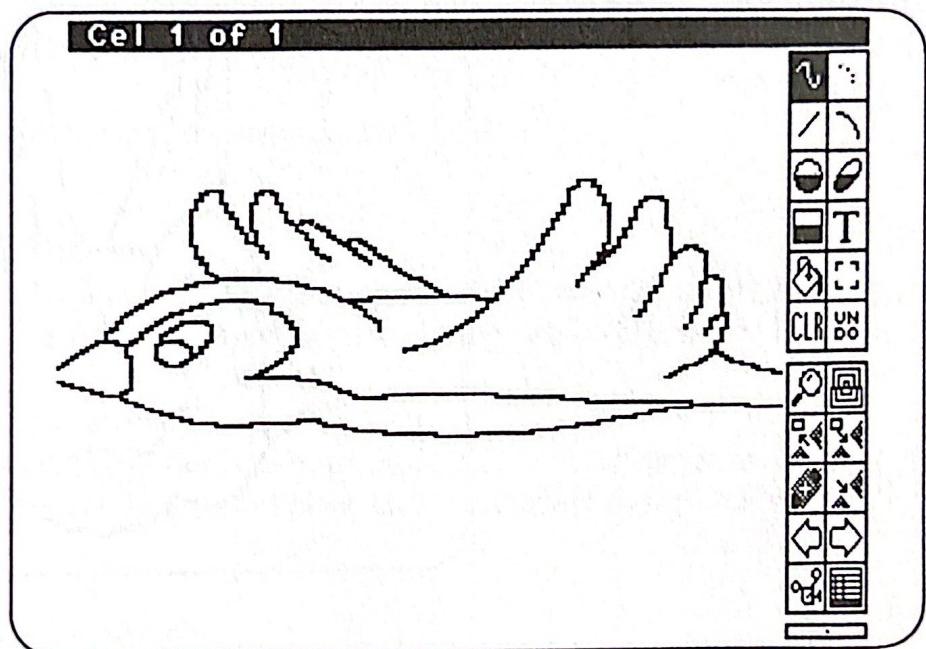


*Figure 3-17. Doubled Image*

## **Wider**

Doubles the brush image in the horizontal direction only.  
The vertical size of the brush remains the same.

Keyboard command: Shift-x



*Figure 3-18. Wider Image*



### Taller

Doubles the brush image in the vertical direction only. The horizontal size of the brush remains the same.

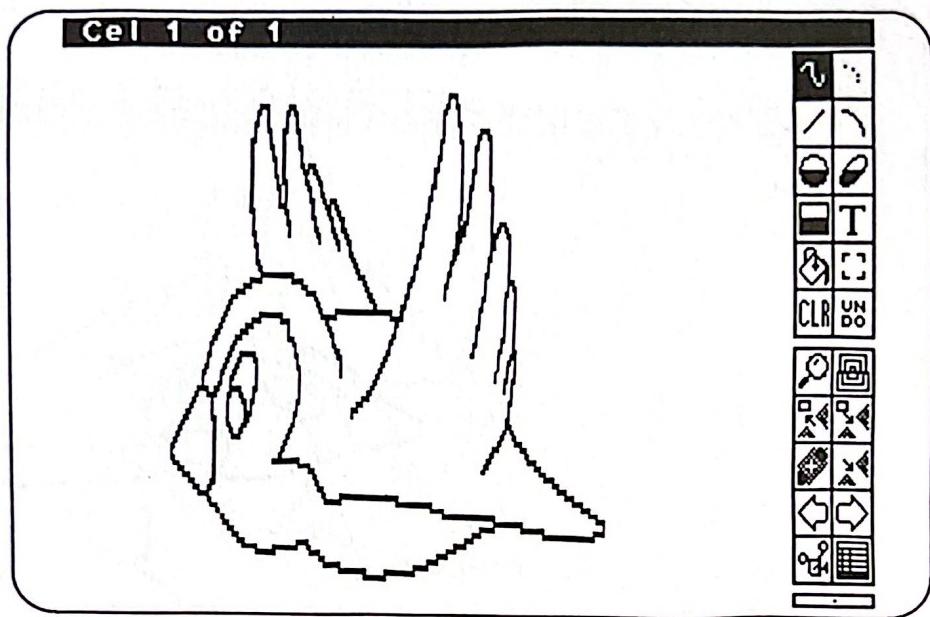


Figure 3-19. Taller Image

Keyboard command: Shift-y



### **Size**

Sizes the brush image any way you like. Select Size and then move the mouse pointer back to the cel area and hold down the left or right mouse button. Drag the image in any direction and to any size you like. To place the brush image, release the mouse button and position the brush on the cel.

Keyboard command: Shift-z

## **Other Sizing Tips**

### **Thinner**

To halve the brush image in the horizontal direction only, select Resize >> Halve and then select Resize >> Taller.

### **Shorter**

To halve the brush image in the vertical direction only, select Resize >> Halve and then select Resize >> Wider.



## Flip

Flip lets you create mirror images of a brush. The following submenu options are available:

### Horizontal

Flips the brush image horizontally. (Compare Figure 3-20 with the original Figure 3-15.)

Keyboard command: x

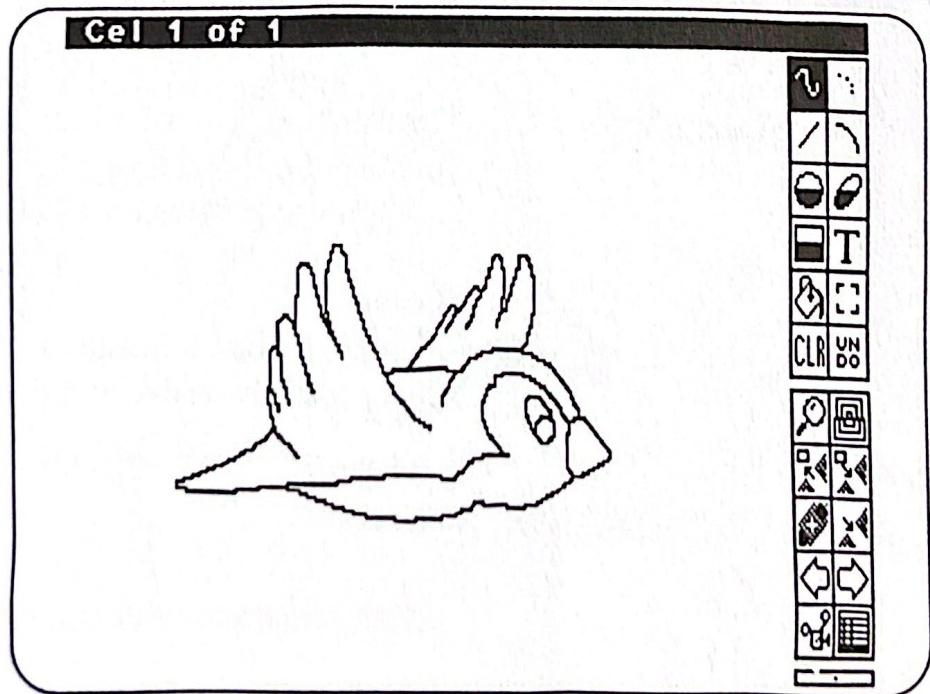


Figure 3-20. Horizontal Flip

**Vertical:** Flips the brush vertically.

Keyboard command: y

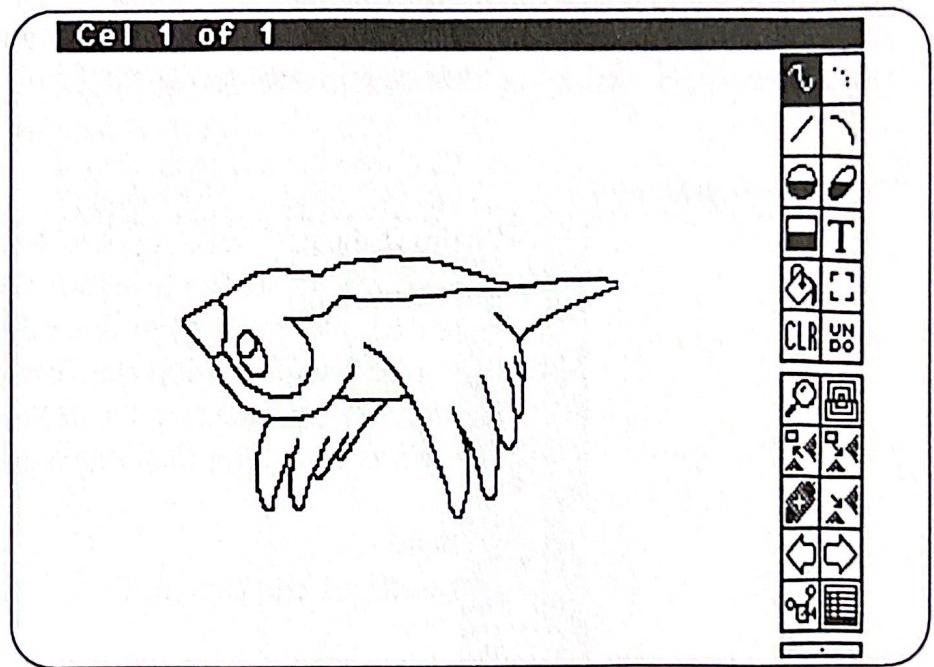


Figure 3-21. Vertical Flip

## Grab From

Grab From instructs the mouse pointer to grab the brush image from the center or a selected corner. The submenu options Center and Corner appear when you select Grab From. If you select Corner, the pointer moves to the corner where you last positioned the mouse. If you make a change in this menu, only the brush images selected after the change are affected.

## Font

Font selects the font you want to use with the text command. This command has several submenus:



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### **Load**

Loads a font. The requester lists the available font files. (Hard drive users: The font files are in the C:\DAS\FONTS subdirectory. Floppy disk users: The font files are on the EXTRAS disk.) The numbers following .M in the file extension represents the font's point size.

Keyboard command: Shift-t

### **Flush Fonts**

Removes fonts from memory. When you load fonts, they're stored into memory and used by the Text command. When you're finished using the Text command, you can free up memory by selecting Flush Fonts. Only fonts that you loaded in will be flushed; default fonts will not be flushed.

### **Bold**

Boldfaces the current font.

### **Italic**

Italicizes the current font.

### **Underline**

Underlines the current font.

An arrow next to the Bold, Italic, or Underline command means it has been selected. To turn off an option, select that option again (the arrow should disappear).

## Pencil Test Tools Menu

To access the Tools menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button and highlight Tools. Move the pointer down to highlight the menu item you want and then release the mouse button to select it.

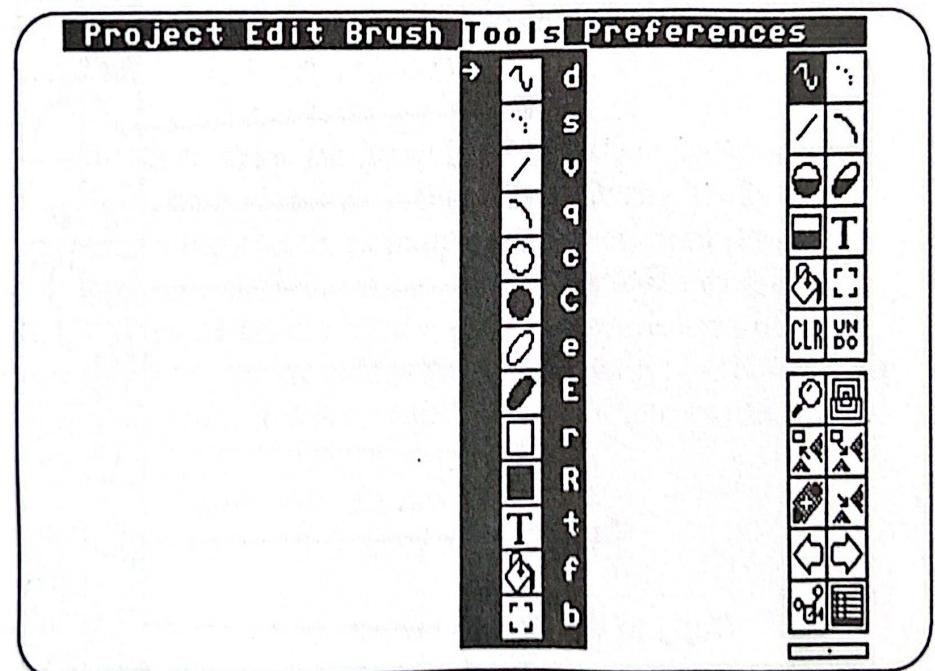


Figure 3-22. Tools Menu



The tools on the Tools menu work the same as those in the Toolbox on the right side of the screen. The Tools menu shows corresponding keyboard commands.

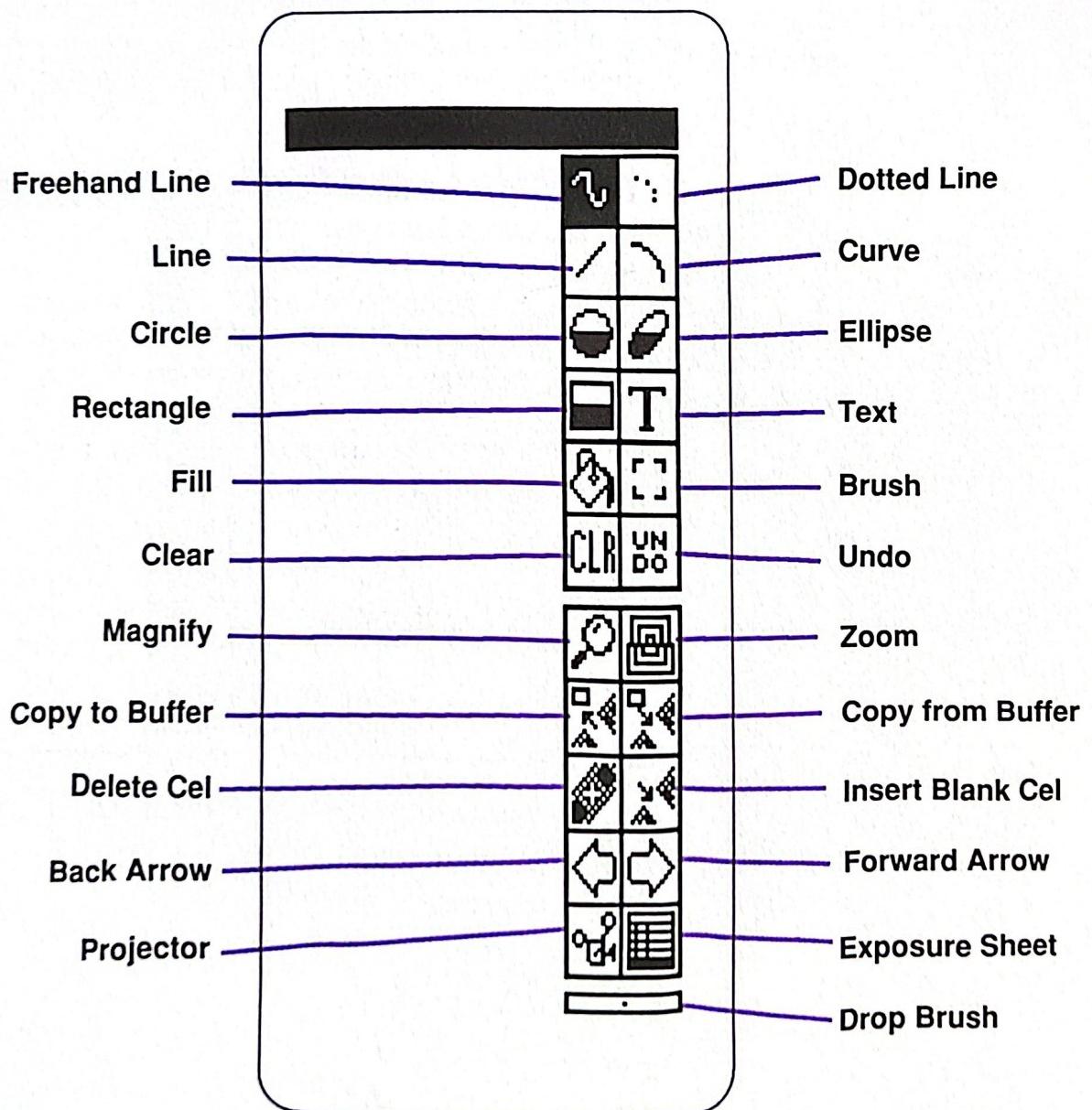
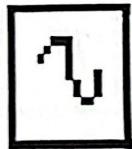


Figure 3-23. Toolbox

## Freehand Line



Select this to draw freehand lines in either black or white. Click on the tool or select the icon from the Tools menu and move the mouse pointer onto the cel area. Hold the left mouse button down and drag the mouse to create black lines. Hold the right mouse button down and drag the mouse to create white lines. (You won't be able to see the white lines if you're working on a white background.)

Keyboard command: d



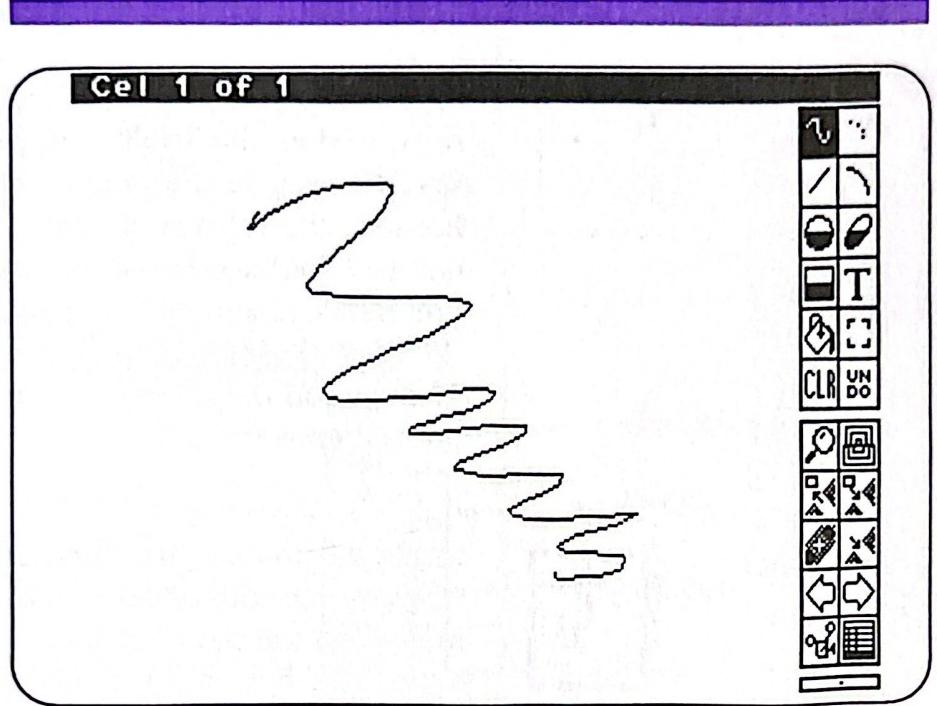
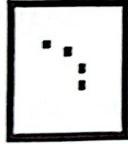


Figure 3-24. Example of Freehand Line

### Dotted Line



This lets you draw freehand dotted lines in either black or white. Click on the tool or select the icon from the Tools menu and move the mouse pointer onto the cel area. To create black dotted lines, hold the left mouse button down and move the mouse. To create white dotted lines, hold the right mouse button down and move the mouse. The faster you move the pointer across the cel, the farther the dots are spread apart.

Keyboard command: s

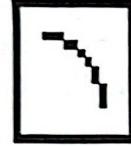
## Line



Select this to draw straight lines. Click on the tool or select the icon from the Tools menu and move the mouse pointer onto the cel area. To create a black line, hold the left mouse button down while dragging the mouse. Release the mouse button when you're done drawing the line. Use the right mouse button to create straight white lines.

Keyboard command: v

## Curve



Curve lets you draw curved lines and arcs. Click on the tool or select the icon from the Tools menu and move the mouse pointer onto the cel area. Hold the left mouse button down and move the mouse to create a black line. When the line is the length you want, release the mouse button. Move the mouse and the line will bend, creating a curve. Click the mouse button once to complete the curve. To create a white curved line, use the right mouse button.

Keyboard command: q

## Circle



Select this to draw circles. To create outline circles, click on the upper half of the circle from the Toolbox or select the outline circle from the Tools menu. To create filled circles, click on the bottom half of the icon or the filled circle from the Tools menu. Move the mouse pointer to where you want the center of the circle to be, hold the mouse button down, and then move the mouse to create the circle. Use the left mouse button to create black circles and the right mouse button to create white circles.

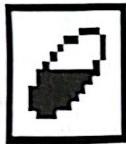


Note: In 640x200 and 640x350 resolutions, the Circle tool draws an elliptical shape. To draw a circle, use the Ellipse tool.

Keyboard commands:

c      Outline circle  
Shift-c      Filled circle

## Ellipse



This tool lets you draw ellipses. To create an outline ellipse, click on the upper half of the ellipse from the Toolbox or select the outline ellipse from the Tools menu. To create a filled ellipse, click on the bottom half of the icon or the filled ellipse from the Tools menu.

Position the mouse pointer where you want the center of the ellipse to be. Hold the mouse button down and drag the mouse — a line forms. This line represents the angle of the ellipse. When the angle of the line matches the angle of the ellipse you want, release the mouse button. Now when you move the mouse, the ellipse takes shape at that angle. Click to set the ellipse.

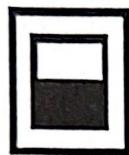
If you're not drawing an angled ellipse, you can simply select the Ellipse tool, click the mouse button on the cel, move the pointer to form the ellipse, and then click the mouse button again to set the ellipse. When you don't specify an angle, the ellipse will form along a vertical or horizontal axis.

Use the left mouse button to create black ellipses and the right mouse button to create white ellipses.

Keyboard commands:

e      Outline ellipse  
Shift-e      Filled ellipse

## Rectangle

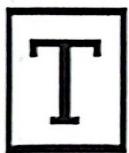


Rectangle lets you draw rectangles and squares. To create an outline square or rectangle, click on the upper half of the rectangle or select the outline rectangle from the Tools menu. To create a filled square or rectangle, click on the bottom half of the rectangle or select the filled rectangle from the Tools menu. Move the mouse to the cel area and press the mouse button to "anchor" one corner. Drag the mouse until the rectangle or square is the size you want and then release the mouse button.

Keyboard commands:

r              Outline rectangle  
Shift-r        Filled rectangle

## Text



Select this to type text characters. Select the Text tool from the Toolbox and move the pointer onto the cel area. Click the left mouse button to type in black or the right mouse button to type in white. The box that appears is your text cursor. To begin a new line of text, press Enter.

Text characters and strings ("strings" are a series of characters), are just like drawings created with any of the other tools. This means you can treat the text like any other drawing: you can select it as a brush, move it, rotate it, resize it, etc.



## Rectangle

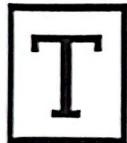


Rectangle lets you draw rectangles and squares. To create an outline square or rectangle, click on the upper half of the rectangle or select the outline rectangle from the Tools menu. To create a filled square or rectangle, click on the bottom half of the rectangle or select the filled rectangle from the Tools menu. Move the mouse to the cel area and press the mouse button to "anchor" one corner. Drag the mouse until the rectangle or square is the size you want and then release the mouse button.

Keyboard commands:

r              Outline rectangle  
Shift-r        Filled rectangle

## Text



Select this to type text characters. Select the Text tool from the Toolbox and move the pointer onto the cel area. Click the left mouse button to type in black or the right mouse button to type in white. The box that appears is your text cursor. To begin a new line of text, press Enter.

Text characters and strings ("strings" are a series of characters), are just like drawings created with any of the other tools. This means you can treat the text like any other drawing: you can select it as a brush, move it, rotate it, resize it, etc.



The font that appears on-screen is the font currently selected in the computer memory. To change this font, select Font >> Load from the Brush menu. The Font requester lists the available fonts. Fonts end with a .M\* file extension (the last two characters of the file extension represent the font's point size). Select the font you want, close the requester by clicking on Load, and then select the Text tool from the Toolbox (if it isn't already selected). If you make a mistake while typing, use the Backspace key to delete characters.

Keyboard command: t

## Fill



This fills an area or a shape with black or white. To create a black cel, select the Fill tool from the Toolbox or the Tools menu, and click on the cel area with the left mouse button. To return to white, click on the cel with the right mouse button.

To fill a shape or drawing, the shape must be completely closed (there can be no break in the pixels that make up the outline). If the shape isn't closed, the rest of the drawing or screen will also be filled. If you make a mistake, you can select Undo from the Edit menu.

If you're sure the shape is closed, but it's not filling correctly, you may have positioned the pointer incorrectly when you clicked the mouse button. The center of the pointer (crosshair) must stay within the shape or the fill will leak into the rest of the drawing or screen.

Keyboard command: f

## Brush



Brush lets you select an image to use as a brush. The image can be a drawing or text. Select the Brush tool from the Toolbox or from the Tools menu and move the mouse pointer onto the cel. Hold the left mouse button down, drag the rectangular box over the image you want to turn into a brush, and then release the mouse button. You can select an entire object, or just a part of an object — there are no restrictions on what you select. This image is now copied to the brush, leaving the original image unaffected. If you use the right mouse button instead of the left to select the brush, the selected image is lifted onto the brush and off the current cel rather than being copied.

Once you turn an image into a brush, you can stamp the image onto any cel just by clicking the mouse button. You can also hold the mouse button down and drag the image to create special effects. Press and hold the left mouse button to create a black image of the brush or press the right mouse button to create a white image of the brush. The brush will work with the Freehand Line, Dotted Line, Line, Curve, Circle, Ellipse and Rectangle Tools.



## Brush



Brush lets you select an image to use as a brush. The image can be a drawing or text. Select the Brush tool from the Toolbox or from the Tools menu and move the mouse pointer onto the cel. Hold the left mouse button down, drag the rectangular box over the image you want to turn into a brush, and then release the mouse button. You can select an entire object, or just a part of an object — there are no restrictions on what you select. This image is now copied to the brush, leaving the original image unaffected. If you use the right mouse button instead of the left to select the brush, the selected image is lifted onto the brush and off the current cel rather than being copied.

Once you turn an image into a brush, you can stamp the image onto any cel just by clicking the mouse button. You can also hold the mouse button down and drag the image to create special effects. Press and hold the left mouse button to create a black image of the brush or press the right mouse button to create a white image of the brush. The brush will work with the Freehand Line, Dotted Line, Line, Curve, Circle, Ellipse and Rectangle Tools.



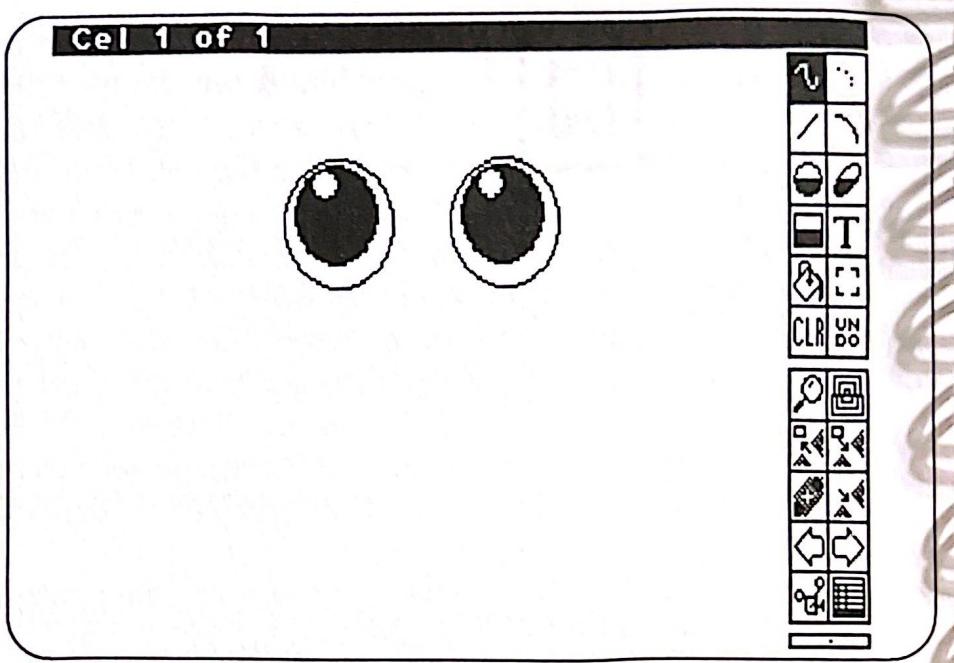


Figure 3-25. Duplicated Brush Example

To deselect a brush, press period (.) or move the mouse pointer to the hollow box located at the bottom of the Toolbox (the hollow box has a small dot in the center of it) and click the left mouse button. To recall a deselected brush, press Shift-b.

Keyboard commands:

b              Select brush tool

Shift-b        Recall last brush tool selected

**CLR**



Select CLR to clear the current cel. The cel is not removed from the animation.

Keyboard command: Shift-k

## Undo



Undo erases or undoes your last action, only if you haven't clicked the mouse between your last action and when you select Undo. If you click Undo twice, your last action remains intact (just think of it as undoing the Undo). The Undo tool is identical to selecting the Undo menu item. Undo cannot undo the Delete command.

Keyboard command: u

## Magnify



Magnify enlarges a selected area of the cel image. Click once on the Magnify tool to display a small rectangular box on the screen; move the box to an area of the drawing and click once to magnify that section of the image.

When you magnify an image, a gray bar divides the screen in half. The magnified image is displayed on one half of the screen, while the original image is displayed on the other.

Magnify is useful for editing because it enlarges the pixels to a size that makes them easy to add or remove. Pixels (short for "picture elements") are the individual black and white squares that, when combined, create the drawing.

Use the left mouse button to add black pixels and the right mouse button to add white pixels. To move the image in the Magnify window, hold the Shift key down and press an arrow key to move in that direction.

If you're using the keyboard command, place the mouse pointer on the area you want to magnify before you press the m key.

Keyboard command: m



## **Zoom**



Select this to zoom in on a magnified image. Repeatedly click on the top half of the Zoom icon to zoom in on an image. Repeatedly click on the bottom half to zoom out on the image. This tool is useful when you're using the Magnify tool to edit a section of a drawing.

Keyboard commands:

Shift-**,** or >      Zoom in  
Shift-**.** or <      Zoom out

## **Copy To Buffer**



Copy To Buffer the current cel to a temporary buffer in computer memory. This tool works the same as the Copy option on the Edit menu. This tool is normally used with the Copy From Buffer tool.

Keyboard command: Shift-o

## **Copy From Buffer**



Copy From Buffer pastes the image stored in the computer memory onto the current cel. This tool works the same as the Paste option on the Edit menu. This tool is normally used with the Copy To Buffer tool.

Keyboard command: Shift-p

## **Delete Cel**



This option deletes the current cel. This tool works the same as the Delete option on the Edit menu. The cels following the deleted cel are renumbered.

If you're using an Exposure Sheet, the number of frames in your Exposure Sheet will remain the same so the timing of your animation remains the same. The cel previous to the one you just deleted is copied to the deleted cel's frame, and then the following cels are renumbered. If you want to delete the frame from the Exposure Sheet as well, click on the repeated cel in the Cel column and then click on the Cut button at the bottom of the Exposure Sheet screen. The information in the deleted cel's Dial, Sound, and Comments is not deleted unless you remove the duplicated cel with the Cut command.

Keyboard command: Delete (Del)

### Insert Blank Cel



Select this to add a blank cel to the sequence. A blank cel is inserted as the current cel number and the following cels are moved ahead in sequence.

Keyboard command: i

### Back Arrow



Back Arrow moves backward through the cel sequence. You can keep moving back through the cel sequence until you reach the beginning of the cel sequence (cel 1).

Keyboard command: ← (left arrow)



## Forward Arrow



Forward Arrow adds a cel or advances one cel ahead. To add a cel, just click on the tool. To advance a cel without adding any additional cels, first press F3 to lock the current number of cels; then click on the Forward Arrow tool to single step through the animation. (Pressing F3 turns on the feature called "Loop Lock," which prevents the number of cels in the current animation from increasing.)

Keyboard command: → (right arrow)

## Projector



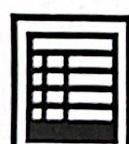
Projector animates the cels in their current order (and not according to the order on the Exposure Sheet). Use this tool often to test your animation as you create the sequence of cels and images.

Keyboard commands:

a Run animation

Shift-a Run animation according to Exposure Sheet

## Exposure Sheet



Select this to open the Exposure Sheet for the current Pencil Test animation. This icon is the same as the Exposure Sheet option on the Project menu. For complete details on how to use the Exposure Sheet, refer to Chapter 4: Exposure Sheet.

Keyboard command: F6

## Pencil Test Preferences Menu

To access the Preferences menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button and highlight Preferences. Move the pointer down to highlight the menu item you want and then release the mouse button to select it.

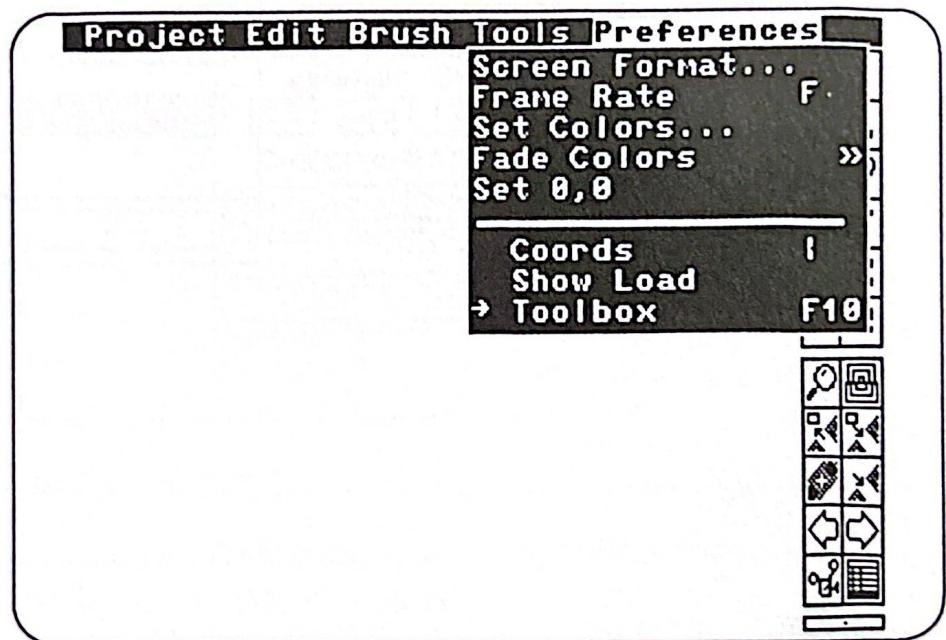
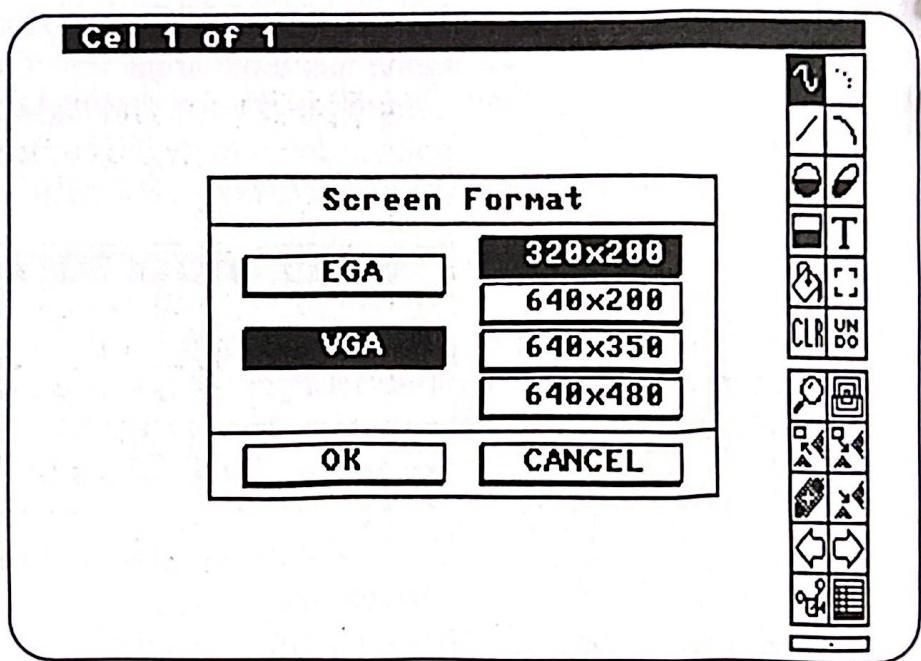


Figure 3-26. Pencil Test Preferences Menu



## Screen Format

Screen Format lets you select the screen resolution and mode.



*Figure 3-27. Screen Format Requester*

The type of Screen Format requester you see depends on the type of graphics you have.

**EGA and VGA users:** EGA users can choose from the screen formats of 320x200 and 640x200. EGA users with an Extended Color Display or multiscan monitor have the additional choice of 640x350. VGA users can select any of the EGA resolutions, and have the additional choice of 640x480 as well.

**CGA, Tandy and MCGA users:** The program will use the 320x200 resolution.

Options that are not available for your graphics setup will be "ghosted" out; you will not be able to select them.

## Frame Rate

Frame Rate lets you set the rate at which the cels of your animation are played back when you animate. Select the Projector tool or the Animate menu option when you're ready to run the cels.

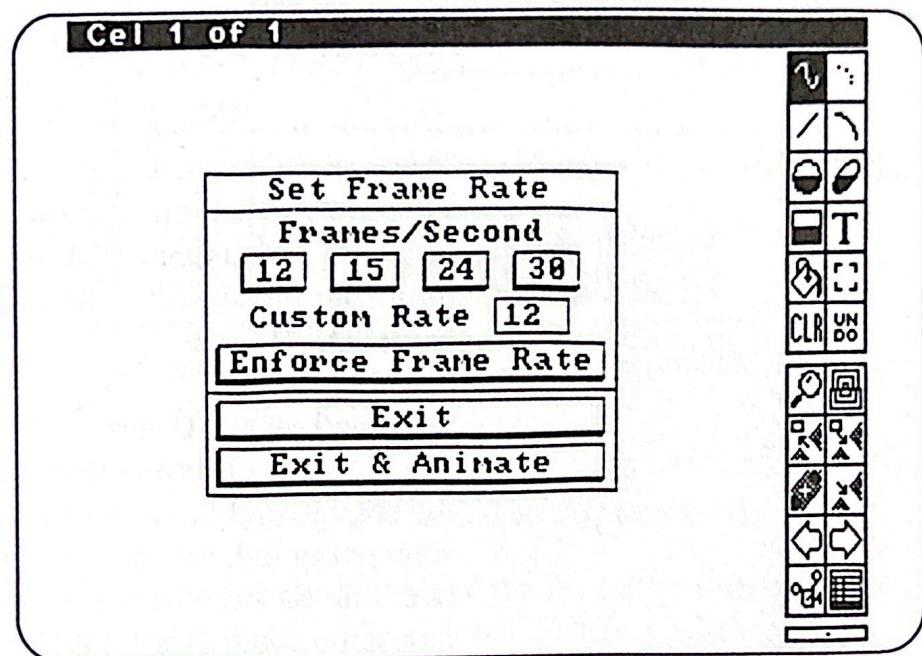


Figure 3-28. Frame Rate Requester

The default frame rate is set to 12 frames per second. You can select 15, 24 or 30 frames per second, or specify a custom frame rate of your own. Traditional animations are run at 24 frames per second, but you may want to set the frame rate slower, especially when testing your animation. The minimum frame rate you can set is 1, and the maximum is 30.

The Frame Rate requester also lets you enforce the selected frame rate. This is the sure way to animate at the frame rate you specify. Enforce Frame Rate uses an internal clock to verify exact frame timing. An animation will stop if the program is unable to maintain a requested frame rate.



Note: If you're running the animation at a very slow frame rate (such as 2 frames per second), you may need to hold the mouse button down (instead of just clicking it) to stop the animation.

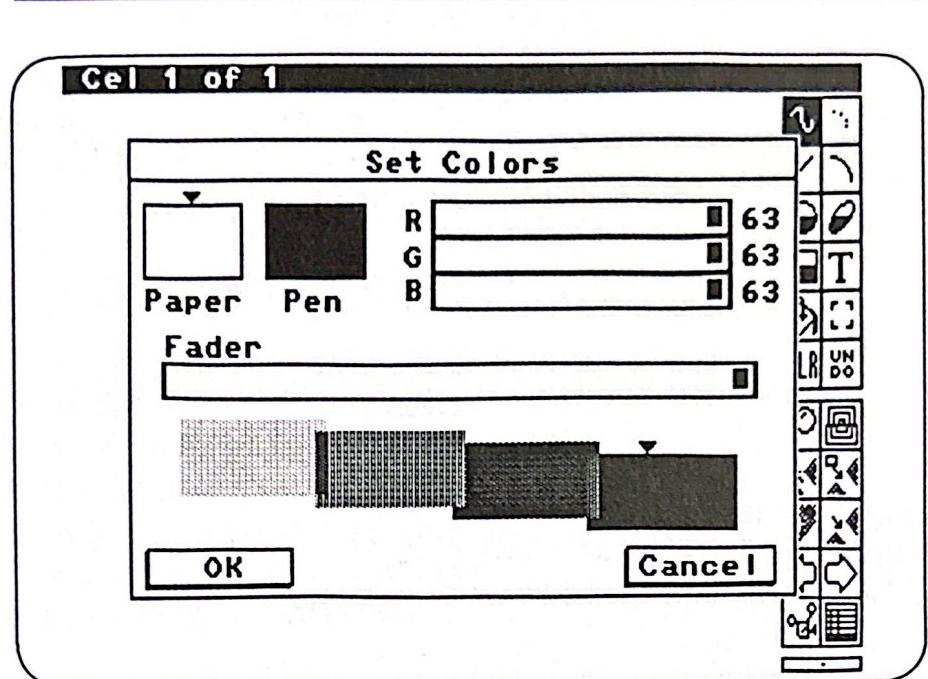
Keyboard command: Shift-f

## Set Colors

This option lets VGA and MCGA users set the pen and screen colors on the monitor, as well as the gray values of the onion skin effect. EGA and Tandy users can choose from four preset color sets. CGA users have one preset color set.

### VGA and MCGA Users

The R, G, and B boxes in the bars in the top right corner of the requester slide to the left and the right, adding or subtracting red, green, and blue. Move the mouse pointer over one of these boxes (sliders); press and hold the left mouse button. Drag the mouse left or right to add or subtract color. You can adjust the color of the pen on the screen as well as the color of the cel background by selecting either the Paper or Pen box to the left of the RGB controls. Adjust the colors for both the background and pen so they're comfortable on your eyes.



*Figure 3-29. Set Colors Requester*

The four boxes at the bottom of the requester represent the shades of gray used in the onion skin effect. Click on one of the boxes, and adjust the gray by dragging the slider in the bar above the four gray boxes. Usually, the shades of gray get darker as you go from left to right, so the bottom layers are lighter than the top layers when using the onion skin effect. The top cel is usually black so you can easily identify the current cel.

## Fade Colors

When you select Fade Colors, you get the following options:

### Invert

Reverses the black and white colors in the image.

Keyboard command: Shift-1 or !



## ONION SKIN

### Fade In

Increases the onion skin effect and makes the onion skin effect more transparent. The Fade In technique is the reverse of Fade Out.

Keyboard command: ]

### Fade Out

Decreases the onion skin effect and makes the onion skin effect less transparent. Each consecutive press of the [ key causes the sequence to fade from the back to front, until you reach the front cel. The image on the top cel remains black. Use this option to reduce the onion skin effect for greater clarity in complex drawings.

Keyboard command: [

## Set 0,0

Set 0,0 sets the X,Y origin on the screen. Select this option and then move the mouse pointer to the screen and click the mouse button where you want 0,0 to reside. X values to the left side of 0,0 are shown as negative numbers; Y values above 0,0 are shown as negative numbers. To reset the coordinates, select this option and then click the left mouse button on the absolute top left corner of the screen.

## Coords

Coords displays the X,Y screen coordinates in the upper right part of the menu bar. As you move the mouse, the numbers change. Using the coordinate display is helpful when you're creating accurate measurements of objects and symmetrical drawings.

The Coords option also helps you draw precise straight lines. With this option on, when you select the Straight Line tool and click on the cel, you see a starting coordinate of 0,0. As you draw the line, you can track the exact length.

An arrow appears next to Coords if this feature is on.

Keyboard command: Shift-\ or | (vertical bar)

## Show Load

This option shows an animation as it loads. If an animation is long, this lets you see how far along the loading process is. An arrow appears next to Show Load if this feature is on.

## Toolbox

Toolbox toggles the Toolbox (on the right side of the screen) off and on. An arrow appears next to Toolbox if this feature is on. This option is useful if you're familiar with keyboard commands and don't need to use the Toolbox; you can then use the entire width of the screen to create your animation.

Keyboard command: F10



## Pencil Test Help Screen

Pencil Test provides a Help screen that lists the actions of the function keys, and other special features of the Pencil Test not described in the Pencil Test menus. To open the Help screen, just press Alt-h. Click on OK at the bottom of the window to close the Help screen.

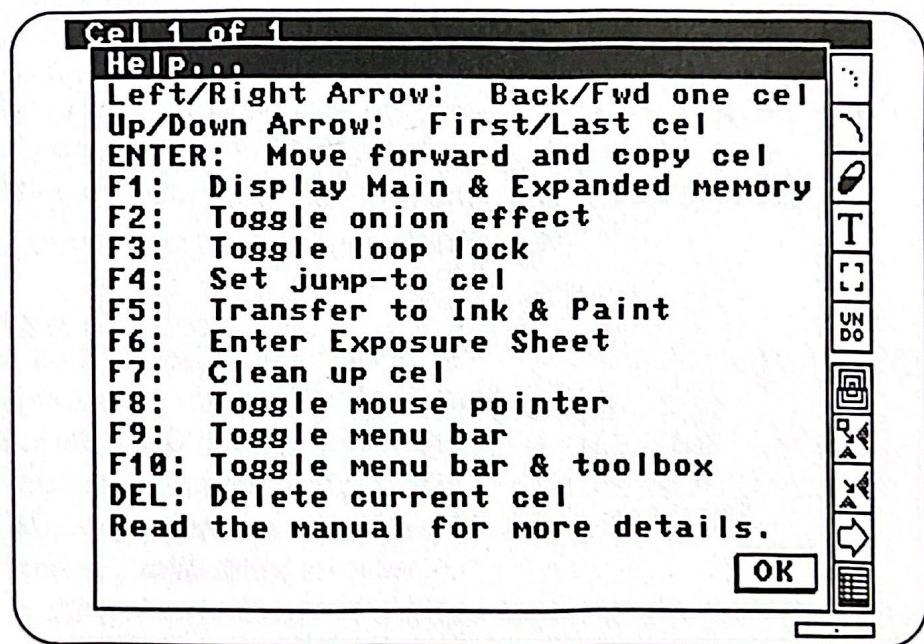


Figure 3-30. Pencil Test Help Screen

### Back/Forward One Cel

Press the left arrow key to move back one cel. Press right arrow key to move forward one cel.

### First/Last Cel

Press the up arrow key to move to the first cel of the animation. Press the down arrow key to move to the last cel of the animation.

## **Copy and Advance One Cel**

Press Enter to copy the contents of the current cel and paste them on the following cel. This command only works when you're on the last cel of the animation. If the Loop Lock feature is on, this command will not work. You can press the F3 key to toggle Loop Lock on or off.

## **Display Main & Expanded Memory**

Press the F1 key to display the amount of free main memory, and the amount currently used by the program. This also displays the amount of expanded memory available and being used.

## **Toggle Onion Effect**

Press the F2 key to toggle the onion skin effect off and on. When you turn onion skin off, the current cel is displayed without the previous cells showing through the current cel.

## **Toggle Loop Lock**

Press the F3 key to lock the number of cels in the sequence at the number you've currently created. This affects how the right arrow key works. The right arrow key advances one cel each time you press it. With the Toggle Loop Lock option off, when you press the right arrow key while on the last cel in a sequence, a blank cel is added. With this option on, when you press the right arrow key while on the last cel, you'll return to the first cel in the sequence, instead of adding a blank cel to the end of the sequence. If you have this option on and you want to add cels, you can press F3 to release Loop Lock or use the Insert New Cel command.



## **Set Jump-To Cel**

Press the F4 key and a number key to assign the current cel to that number key. By pressing a number key, the cel you assigned to that key appears when you press it; press any key to return to the current cel of your animation. You can set a total of ten different cels to the 0 through 9 number keys using this command. This feature is useful when you need to see black and white versions of a background as references while creating the animation.

## **Transfer to Ink & Paint**

Press the F5 key to transfer to the Ink & Paint program. This function key only works if you entered the Pencil Test program from the DAS program. If you've been working on a Pencil Test drawing, you must save it before transferring to Ink & Paint; otherwise, all your Pencil Test work will be lost.

## **Enter Exposure Sheet**

Press the F6 key to enter the Exposure Sheet. To return to the Pencil Test program, press F6 again, click the left mouse button on Cel-Ed at the bottom of the Exposure Sheet, or select Pencil Test from the Exposure Sheet Project menu.

## **Clean Up Cel**

Press the F7 key to clean stray pixels from the current cel. Stray pixels are those that are not adjacent to another pixel.

## **Toggle Mouse Pointer**

Press the F8 key to toggle the screen display of the mouse pointer off and on.

## **Toggle Menu Bar**

Press the F9 key to toggle the display of the menu bar off and on. This is useful if you want to see the upper area of the cel. Even when the menu bar is not visible, you can still access menus by moving the pointer to the top of the screen and pressing the right mouse button.

## **Toggle Menu Bar & Toolbox**

Press the F10 key to toggle the menu bar and Toolbox off and on. This lets you see the entire cel.

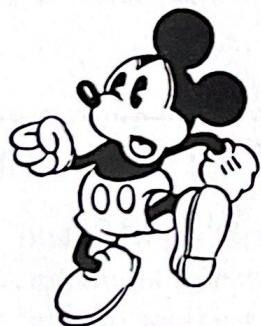
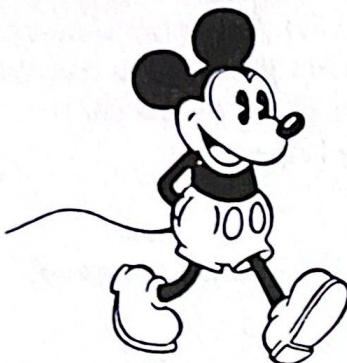
## **Delete Current Cel**

Press the Delete key to delete the current cel. There is no way to retrieve the cel once you delete it, so use this command only if you're absolutely sure you want the cel deleted.

# **Creating a Pencil Test Animation**

Now that you're familiar with the Pencil Test tools and menus, you're ready to create drawings and animations. The tools and specific techniques that you use depend on the type of animation you want to create. Perhaps you want to draw a character using freehand lines, or create an object using circles and rectangles. The actual step-by-step procedures that you perform will vary. This section provides general steps that give you an idea of the process you'll go through to create and test your animation, as well as give you some tips and techniques that you can use once you feel comfortable with the Pencil Test basics.





## To Create a Drawing

1. Select a tool from the Toolbox by clicking once on the tool icon. Click on the top half of the “split” icons to create outlines, or on the bottom half to create filled shapes.
2. Move the mouse pointer to the cel area.
3. Begin to create the object or character on cel 1.
4. If you make a mistake, you can select Undo (which cancels your last action), or CLR (which erases the current cel).

## To Create Cel Sequences

1. If you haven't created a drawing, follow the steps listed above in "To Create a Drawing."
2. To create the next drawing on cel 2, the method you use depends on the differences between cel 1 and cel 2:
  - Use the onion skin effect to hand draw the character or object again on cel 2 using the tools from the Toolbox, making the slight changes necessary to create the illusion of movement. Advance to the next cel using the Forward Arrow tool or the right arrow key, and continue to make adjustments to your character or object to create movement.

## A Study in Movement

- Copy cel 1 using the Enter key. The Enter key copies the current cel, advances to the next cel, and then pastes the copied image onto the following cel all in one step. Make the necessary edits on cel 2 to create the illusion of movement.
- Copy the image on cel 1 as a brush, create cel 2 by pressing the right arrow key or by clicking on the Forward Arrow tool, and place the brush image on cel 2 by clicking the mouse button. Make the necessary edits on cel 2 to create the illusion of movement.

The changes you make as you step through the cels may be as simple as changing the placement of the object on screen, or as elaborate as moving the character's hands and changing the facial expressions. One of the best features of The Animation Studio is that you can be as creative and detailed as you like, no matter what your level of animation expertise.

It's important to create a number of cels in the sequence. Depending on the type of movement, different animations require a different number of cels to create smooth and believable movement.

The different types of movement are:

- *The movement of simple objects, such as a bouncing ball*
- *Limited animation, where certain parts of the animation moves, while other parts are duplicated from cel to cel*





- *Disney-style animation, which imitates the real movement of objects and people*

A lesson in movement of simple objects is included in The Animation Studio Getting Started manual. The object remains in the same form throughout the animation, while the placement of the object on the cel is what provides the illusion of movement.

Limited animation is a type of animation used widely in Saturday morning cartoons. It's a technique that limits the amount of the character's movements. The main part of the character is copied from cel to cel, while just the mouth, or perhaps only the arms and legs are changed to create the illusion of talking or walking. There's an example called "Mouth Chart" in Chapter 6: Putting it All Together that shows a limited animation. The mouth chart shows different mouth types and expressions that might be helpful for you when creating a talking character.

Disney animation imitates real movement, as it exists in life. During the creation of a Disney animation, the animators look at people, animals, and objects to create believable and lifelike movement. This takes time and patience, but the result is beautiful. If you're interested in creating Disney-style animations, be sure to read Chapter 6: Putting It All Together and refer to the sample animations provided on the MORGUE and EXTRAS disks. Also refer to the Bibliography provided in this manual, which lists reference books used by animators to learn about movement, animation, and industry terminology.

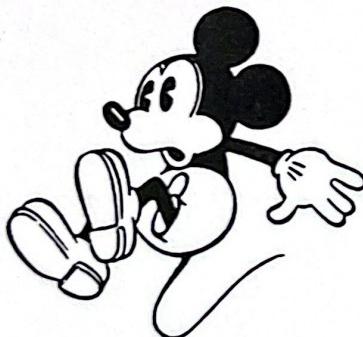
Creating a limited or full animation may take more cels than you think. Don't be afraid to generate 20, 40, 60 cels or more if that's what it takes to create your animation.

## Testing the Animation Sequence

You should continually test your animation sequence as you create cels to be sure that the movement and result of your efforts is what you expect. Frequent testings help you find the areas that perhaps aren't quite right, or the areas where you may need to add more cels to make the animation more believable and smooth.

To test your animation:

1. Click on the Projector tool in the Toolbox, select Animate from the Project menu, or press the a key. The animation will start, beginning with cel 1. It will continue to loop through the cels until you tell the animation to stop.
2. To stop the animation, click either mouse button. The left mouse button stops the animation on the cel you were on when you started the animation; the right mouse button stops the animation on the current cel.



At this point you may want to rerun the animation at a slower rate so you can clearly see the progression of cels. To adjust the Frame Rate:

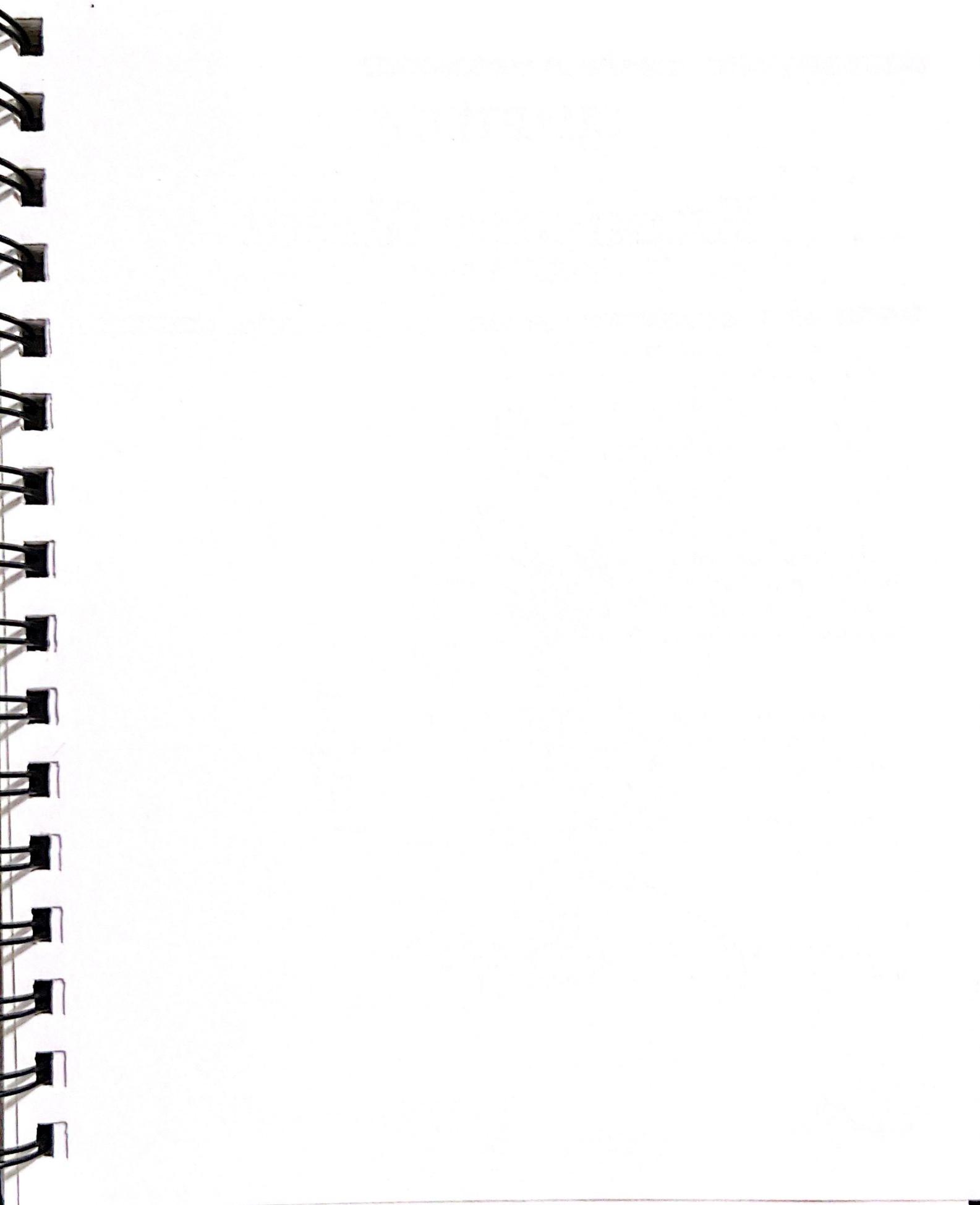
1. Select Frame Rate from the Preferences menu.
2. Select or enter the frame rate. You may want to run the animation at 6 or 8 frames per second while testing the cel sequences.
3. Select Enforce Frame Rate from the requester to run the animation again at the slower speed.



- 
4. Click either mouse button to stop the animation.

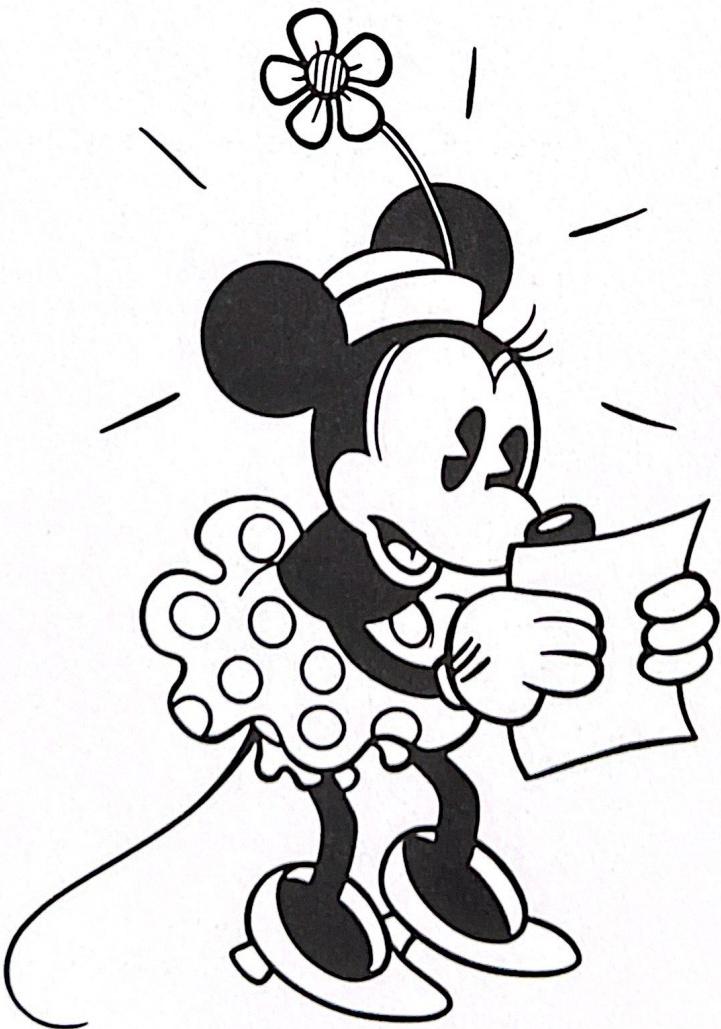
Once you feel comfortable with the animation you've created and tested, you can move on to creating the Exposure Sheet for your animation.





# CHAPTER 4

# Exposure Sheet



---

## Exposure Sheet

Once you've created a Pencil Test animation, you can create the Exposure Sheet for that animation. The Animation Studio Exposure Sheet lets you order the cels and create the proper timing for your animation, as well as incorporate sound effects. Once you learn how to use the Exposure Sheet, you'll find that it's a very useful tool in the creation of fun and interesting animations.

Traditional animation relies on the exposure sheet as a guide to filming the animation. The information on the exposure sheet provides the instructions on how to shoot the film. Similarly, The Animation Studio Exposure Sheet provides you with the tools you'll need to create effective timing and sound effects.

This chapter describes The Animation Studio Exposure Sheet menus and options, and provides instructions on how to coordinate the Exposure Sheet with your animation. A list of commands used to control the animation is included, as well as a description of the Exposure Sheet Help Key. Commands used to incorporate sound effects are discussed (a complete list of the sound commands are provided in Appendix A: Sound Effects).

When you select Exposure Sheet from the Project menu in the Pencil Test program, the screen opens to the full size of your display.



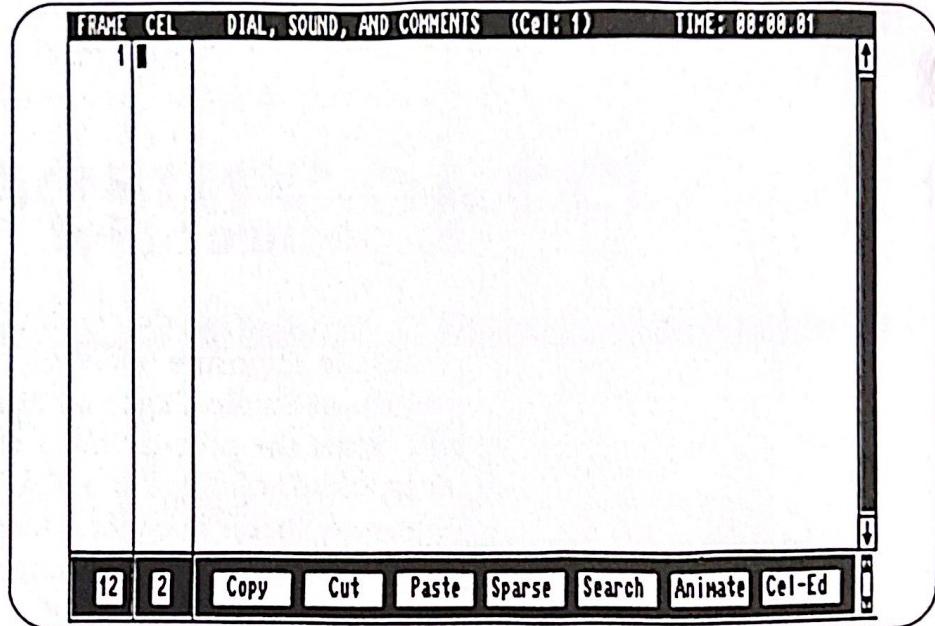


Figure 4-1. Exposure Sheet Screen

The bar at the top of the screen shows the following:

- *Frame*
- *Cel*
- *Dial, Sound, and Comments*
- *Cel: 1 (Current Cel)*
- *Time: 00:00.01*

## Frame

The Frame column lists the number of frames used in the animation. The box at the bottom of the Frame column shows the frame rate (the default value is 12 frames per second). See “Adjusting the Frame Rate” at the end of this chapter for details on how to change the frame rate. The TIME value is determined by the number of frames and the frame rate (the number of frames that appear per second).

## CEL

The Cel column lets you assign a cel of the animation to a frame. This tells The Animation Studio when and how long to display a cel when running the animation from the Exposure Sheet. In traditional animation, this column tells the camera person when and how many frames to show the cel. In both The Animation Studio and traditional animation, the cel column lists the order of the cels. To erase a number in the Cel column, click on the number and press the Delete key or press Ctrl-x.

The box at the bottom of the Cel column is the number of blank frames automatically inserted after each cel. The default setting is 2. To change this number, position the pointer in this box and click the left mouse button. You can automatically insert between 1 to 6 blank frames after each cel. The more blank frames you have between each cel, the slower the animation will run.

## Dial, Sound, and Comments

The Dial (short for Dialogue), Sound, and Comments column lets you enter sound effect and instrument commands, or notes and comments to yourself about the content of the frames and cels. The control commands specific to The Animation Studio are described later in this chapter, and the detailed use of the sound commands is provided in Appendix A: Sound Effects.

You can also enter any comments about a cel. Position the highlight box in the Dial, Sound, and Comments column next to the cel number you want to make a comment on and then type. When you run out of space for a comment, the screen will flash. You can enter up to 255 characters on a line.



## Cel:1

The current cel of the Pencil Test is shown.

## Time

The Time displayed on the right side of the menu bar shows the length of the animation to the current position of the text cursor on the Exposure Sheet. This number changes whenever you move the text cursor up or down to a new location.

## Command Boxes

The boxes at the bottom of the screen correspond to several of the menu items discussed in the Edit menu section. The following are additional boxes not covered in the Edit menu section.

### Animate

Animate runs the animation according to the Exposure Sheet; click either mouse button to stop the animation and return to the Exposure Sheet.

### Cel-Ed

Cel-Ed (short for Cel Edit) returns you to the Pencil Test screen.

### Screen Resolution

The icon in the bottom right corner of the screen switches the screen to a higher resolution; this allows you to see more lines on the Exposure Sheet at once. Click on it again to return to the lower resolution. This option is only available with MCGA, VGA, or EGA equipped with an Enhanced Color Display or multi-frequency monitor.

Once you open and edit an Exposure Sheet, it is automatically stored with the animation. When you save the animation, you're also asked if you want to save the Exposure Sheet with it.

## Exposure Sheet Menus

To access the Exposure Sheet menus, move the mouse pointer to the menu bar at the top of the screen and hold down the right mouse button. The following menus appear:

- *Project*
- *Edit*
- *Preview*

The Project menu is similar to the Pencil Test Project menu. This menu lets you perform the basic file and Exposure Sheet functions. The Edit menu lists the keyboard commands that correspond to the functions displayed in boxes at the bottom of the screen. The Preview menu provides the requesters for sound effects.

## Exposure Sheet Project Menu

To display the Project menu items, move the mouse pointer to the menu bar, hold the right mouse button down, and move to the Project menu. Some of the menu items have corresponding keyboard commands.



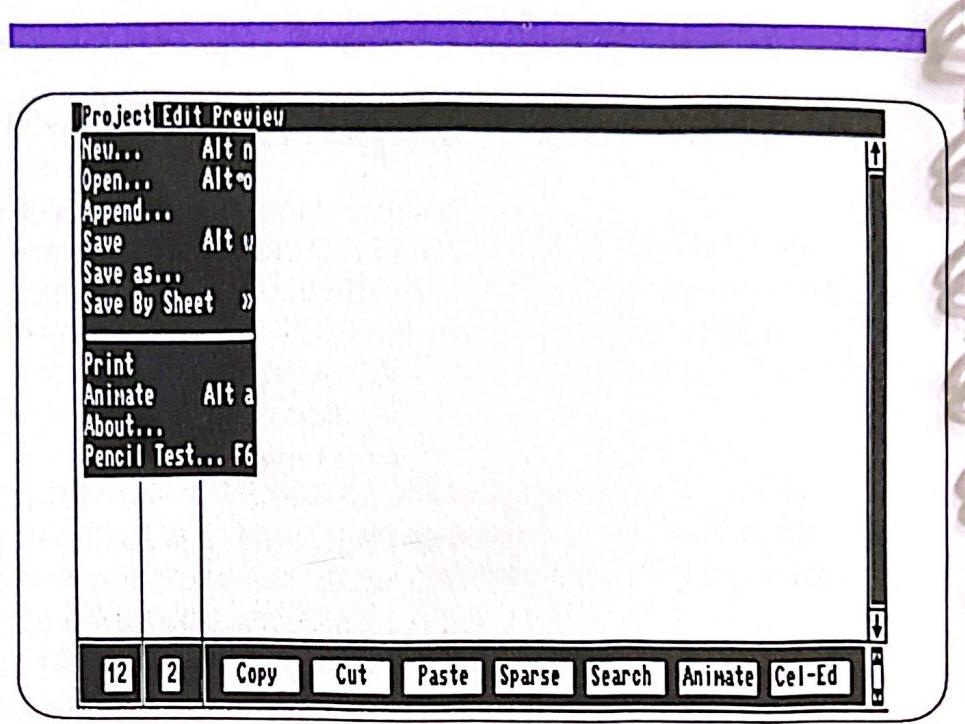


Figure 4-2. Exposure Sheet Project Menu

## New

New clears the current Exposure Sheet.

Keyboard command: Alt-n

## Open

Open loads a pre-existing Exposure Sheet. The requester lets you move through the system to locate Exposure Sheet files. Previously saved Exposure Sheet files have the .XPO file extension.

Keyboard command: Alt-o

## Append

Append adds another Exposure Sheet to the end of the current Exposure Sheet.

## **Save**

This option saves the current Exposure Sheet. If the current Exposure Sheet has never been previously saved, the requester asks if you want to save the file as UNTITLED.XPO. We recommend that you assign a file name to each file and Exposure Sheet using the Save As command. Since the Exposure Sheet is automatically saved to the animation, you only need to use this command if you intend on using the current Exposure Sheet as a template for other animations, or if you want to move the current Exposure Sheet and add it to another Exposure Sheet.

Keyboard command: Alt-w

## **Save As**

This option lets you save the Exposure Sheet and assign a name to the Exposure Sheet file. When you select Save As, the Save As requester appears. If the current file has never been saved before, UNTITLED.XPO appears in the file name box. Position the pointer in the file name box on the "U" in UNTITLED and click the left mouse button; a black box appears. Press the Delete key until the word UNTITLED is erased. Then type in a new file name. Make sure that your file has the .XPO file extension; this allows The Animation Studio to recognize it as an Exposure Sheet file.



If you assign a file name already in use, another requester asks if you want to overwrite the existing file with the current file. Make sure that you don't overwrite an Exposure Sheet that you want to keep intact. You only need to use this command if you intend on using the current Exposure Sheet with another animation or another Exposure Sheet. Otherwise, the current Exposure Sheet is automatically attached to the animation.



## **Save By Sheet**

Select Save By Sheet to save the animation with the timing established in the Exposure Sheet. Save By Sheet saves the animation frame by frame and preserves the Exposure Sheet information. You can use Save By Sheet with the IFF or Anim file formats. This function is useful when you create a black and white animation and you want to paint the animation in another paint package, while maintaining the timing established in the Exposure Sheet.

## **Print**

Select Print to print the Exposure Sheet to your printer. Make sure the printer is turned on and On Line when you select this option.

## **Animate**

Animate runs the current series of cels in the Pencil Test according to the information in the Exposure Sheet. Press either mouse button to stop the animation and return to the Exposure Sheet. If you're in Pencil Test and you want to run the animation according to the Exposure Sheet, press Shift-a.

Keyboard command: Alt-a

## **About**

About displays a window notifying you of the software version number and copyright information.

## **Pencil Test**

Select Pencil Test to return to the Pencil Test screen.

Keyboard command: F6

## Exposure Sheet Edit Menu

To display the Edit menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button, and highlight Edit. Move the mouse down to highlight the menu item you want and then release the mouse button to select it.

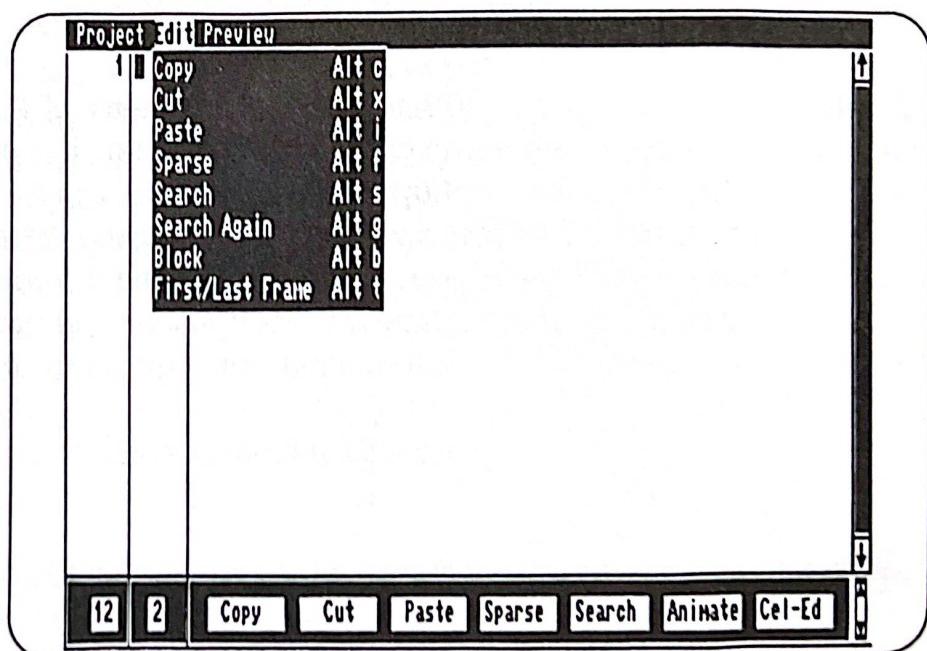


Figure 4-3. Exposure Sheet Edit Menu

### Copy

This copies a line or a group of lines to memory. To select a group of lines, see the Block command. Use the Copy command with the Paste command.

Keyboard command: Alt-c



## Cut

Cuts a line or group of lines from the Exposure Sheet. To select a group of lines, see the Block command. The deleted lines are temporarily stored in computer memory, and can be reinserted into the Exposure Sheet using the Paste command. This is called a “safe delete” since you can retrieve the information you just cut.

Keyboard command: Alt-x

## Paste

Paste inserts the contents of the temporary memory into the Exposure Sheet. Information that you selected using the Copy or Cut command can be pasted back into the Exposure Sheet using the Paste command. Remember that you can only paste the most recent Copy or Cut into the Exposure Sheet since temporary memory only stores information from your most recent action.

Keyboard command: Alt-i

## Sparse

Sparse adds space in the Exposure Sheet in the form of blank frames. Use this technique to slow down parts of the animation. All frames that follow the inserted space(s) are moved ahead in the Frame column. If you highlight a block of cels and then select Sparse, a blank frame will be inserted after every line in that block. You can increase the number of blank frames to be inserted by clicking on the number box at the bottom of the Cel column before selecting Sparse.

Keyboard command: Alt-f

## Search



Search lets you search the Exposure Sheet for a word or string of characters. "Enter search pattern:" appears at the bottom of the screen. If there's a string in the edit field, press the Delete key until the string is erased or press Ctrl-x. Then enter the string you want to locate and then press Enter.

The program searches the Dial, Sound, and Comments column for the matching string. The Search function searches down from the current cursor position to the last frame in the Exposure Sheet. If you want to search the entire Exposure Sheet, make sure the highlight box is at the top of the Exposure Sheet. If no match is found, the screen flashes once. Use Search to locate commands or comments in the Dial, Sound, and Comments column, which is especially helpful when you're working on large animations.

Keyboard command: Alt-s

## Search Again

Select Search Again to search for the next occurrence of the string you most recently entered in the Search command. If no match is found, the screen flashes once.

Keyboard command: Alt-g



## **Block**

Select Block to highlight a number of lines on the Exposure Sheet. Use this command to select more than one line of information for use with the Copy, Cut, or Sparse commands. To select a block of lines, you can click on the left mouse button and drag the mouse pointer up or down to encompass the area you want to block, or you can select Block and move the cursor to a new location. The lines in between the first and last cursor positions are selected, and any of the Block operations can now be selected. The operation you choose will affect the selected block.

Keyboard command: Alt-b

## **First/Last Frame**

This moves the cursor to the beginning or end of the Exposure Sheet. If you're on frame 1 when you select First/Last Frame from the Edit menu, you'll move to the last frame of the Exposure Sheet. If you're on any other frame, you'll go to frame 1.

Keyboard command: Alt-t

---

## **Exposure Sheet Preview Menu**

To display the Preview menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button, and highlight Preview. Move the mouse down to highlight the menu item you want and then release the mouse button to select it.

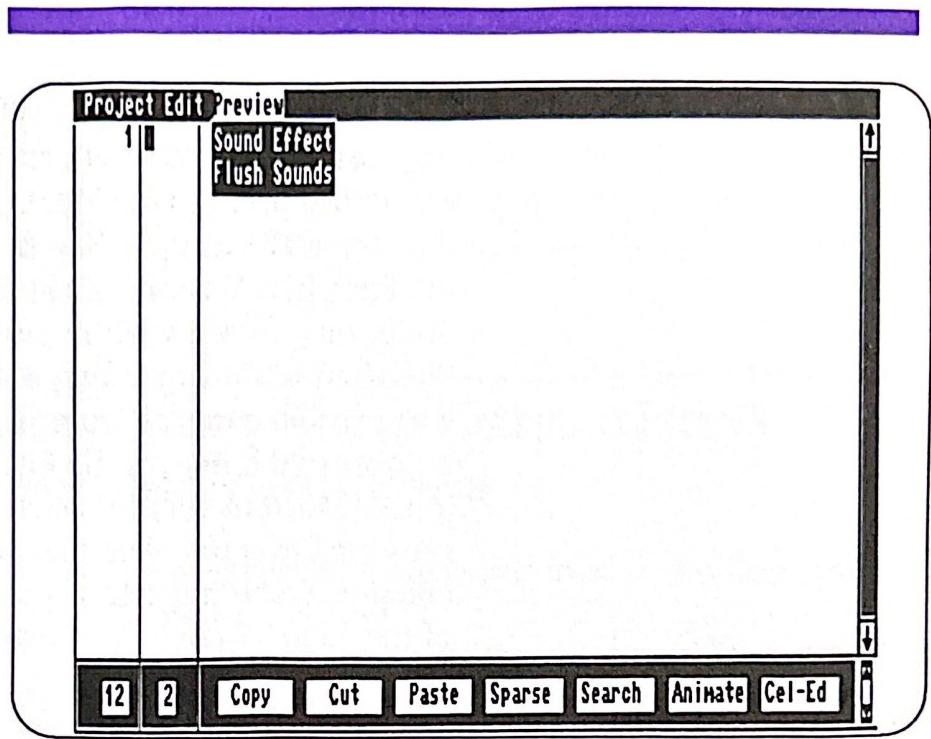


Figure 4-4. Exposure Sheet Preview Menu

## Sound Effect

Select this to open the Preview Sound Effect requester. Double-click on a sound effect file and a second Preview Sound Effect requester appears; press Shift to hear the sound effect.

**IMPORTANT:** You will only be able to hear sound effects if you're using The Sound Source, Sound Blaster, or Tandy Digital Sound. If you are not using one of these, you will not be able to hear the sound effects.

Hard disk users: The sound effects are located in the C:\DAS\SOUNDFX subdirectory. Floppy disk users: The sound effects are located on the EXTRAS disk.



The Sound Effect requester offers a simple and effective way to preview sound effects created in music packages that create .INS or .VOC files (.VOC files only work with the Sound Blaster). The bar in the center of the screen is the Pitch bar. You can adjust the pitch of a digitized sound. To do this, click the left mouse button on the box in the Pitch bar; while continuing to hold the mouse button down, roll the mouse left or right to slide the Pitch bar. The number to the right of the Pitch bar is the Pitch number. You can also modify the pitch by clicking in this box, pressing Ctrl-x to delete the current Pitch number, and entering a new number. If you move the Pitch box outside of the 60 to 71 range, you may hear no sound effect.

You can adjust the pitch more if you've loaded an IFF sound file containing more than one sample. Tandy 1000 users can also adjust the volume.

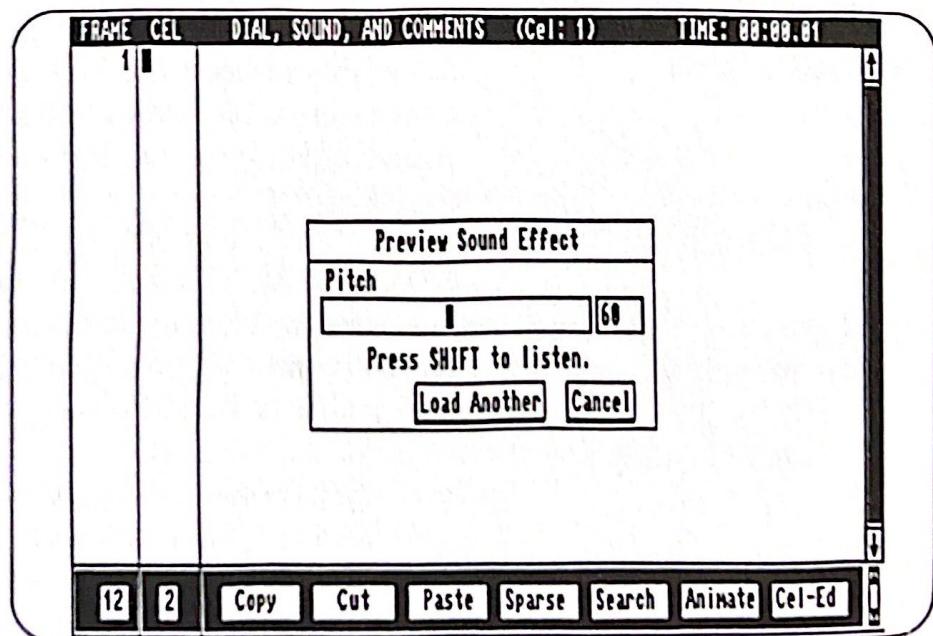


Figure 4-5. Sound Effect Requester

## **Flush Sound**

Select Flush Sound to clear previously loaded sounds from memory. As you load sound effects, they're loaded in your computer's memory. When you're finished using the Sound Effect command, you can free up memory by selecting Flush Sound.

## **Exposure Sheet Control and Sound Commands**

There are two types of !Commands used in the Exposure Sheet: Control and Sound.

To enter the !Commands in the Exposure Sheet, simply click the left mouse button in the Dial, Sound, and Comments column. A small highlighted box (the cursor) appears. Use the keyboard to type the command you want to use. The exclamation point (!) is always placed before the command term.

### **Control Commands**

Control commands affect the execution of the Exposure Sheet, and are particularly useful in letting you test segments of the animation. The following are Control commands:

#### **!Begin**

The !Begin command tells the Exposure Sheet where to begin animating. It sets the starting frame of the animation. This command is useful when used with the !End command to section off areas of the animation that you'd like to isolate and run according to the Exposure Sheet information. The !Begin command can also be used alone to indicate where to start to run the animation. Once the end of the Exposure Sheet is reached, the program loops and plays from the !Begin command.



### **!End**

The **!End** command sets the ending frame of the animation and can be used in conjunction with the **!Begin** command to isolate areas of the animation to test and work on. The **!End** command can be used alone anywhere in the Exposure Sheet to end the animation and loop back to the beginning.

For example, if you wanted to test frames 15 through 40 of an animation, you would type **!Begin** at frame 15 under the Dial, Sound, and Comments column, and you would type **!End** on frame 40 in the Dial, Sound, and Comments column. When you run the animation according to the Exposure Sheet, you will view only frames 15 through 40.

## **Sound Commands**

Sound commands are used to incorporate and manipulate notes and sound effects. The following are Sound commands:

### **!SFX**

The **!SFX** command plays an IFF or raw digitized sound effect. The sound must have the .INS or .VOC extension. Unlike the **!NOTE** command, **!SFX** can play a sound effect at any rate.

### **!Note**

The **!Note** command lets you select and play an IFF or raw digitized instrument.

### **!Instrdir**

The **!Instrdir** command is only necessary if the instruments are not in the current directory. The full path name must be included.

### **!Stop**

The !Stop command stops the current sound effect or note.

## **Exposure Sheet Help Screen**

The Exposure Sheet provides a Help screen. The Help screen displays special keys not listed in the menus, function keys, and !Command syntax. Press Alt-h to display the Help screen.

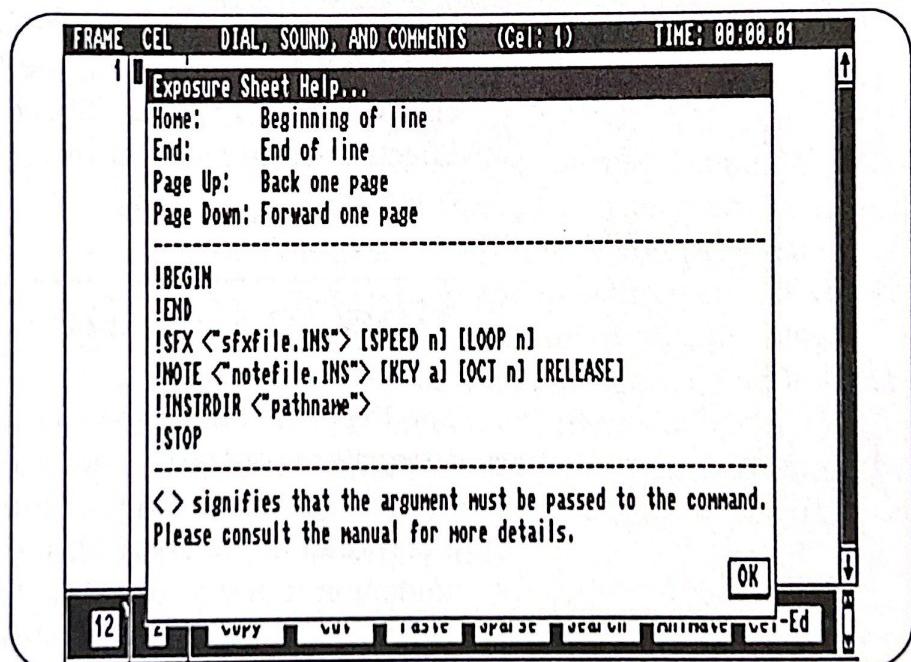


Figure 4-6. Exposure Sheet Help Screen

### **Home**

Press the Home key to move the cursor to the beginning of a line.

### **End**

Press the End key to move the cursor to the end of a line.



## **Page Up**

Press the PgUp (Page Up) key to move the cursor back a page.

## **Page Down**

Press the PgDn (Page Down) key to move the cursor forward a page.

To use the above keys, make sure the NumLock (Number Lock) key is off.

## **Commands**

The !Commands (!BEGIN, !END, !SFX, !NOTE, !INSTRDIR, and !STOP) are entered in the Dial, Sound, and Comments column of the Exposure Sheet. See Appendix A: Sound Effects for complete details on how to use these commands.

---

## **How to Use the Exposure Sheet**

The Exposure Sheet operates according to your instructions: the order and spacing of the frames and cels and the types and order of sound effects that you want to incorporate. It's a good idea to experiment and run your animation to test your work. To achieve effects similar to standard animations, remember that standard animations are filmed at 24 frames per second, which means that 24 frames pass in front of the camera every second.

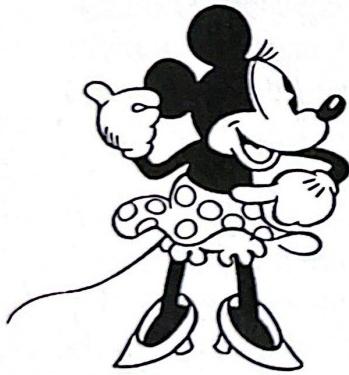
Most animations are filmed in twos: each cel is shown twice. When you first open the Exposure Sheet, it's set up to help you run your animation in twos: each time you press Enter to add frames, the cels of your animation are automatically added to every other frame. You can change the order of the cels to suit your needs by editing the Cel column on the Exposure Sheet.

Click the mouse in the Cel column and use the keyboard to add, delete, or reorder the cels. The number located in the small box at the bottom of the Cel column displays the number of frames added to the Exposure Sheet each time you press Enter (the default value is 2).

## Creating an Exposure Sheet

1. Move the mouse pointer to the Frame column. Notice that the Exposure Sheet has a 1 in the Frame column and a 1 in the Cel column. The 1 in the Cel column is highlighted.
2. Press Enter to add frames to the Frame column. If you open the Exposure Sheet without creating any cels, or if you created only one cel, each time you press Enter frames will continue to be added without cels. If you've created an animation of two or more cels, pressing Enter adds two frames to the Frame column and places cel 2 at frame 3. The number of frames added is specified by the number in the box at the bottom of the Cel column. To change the value, click on the box. Values can range from 1 to 6.

Notice that the time of the animation displayed in the menu bar increases as you add frames to the Exposure Sheet. The amount of time depends on the frame rate and the number of frames entered in the Exposure Sheet. For example, if you have a total of 48 frames running at the rate of 12 frames per second; when you position the highlight box at frame 48, the time will show 4 seconds.



3. To add or change the order of cels in the Cel column, click the mouse button in the Cel column on the frame line that you want to modify.

If a cel number already exists on that line, click the mouse on the cel number to highlight the number. Delete that number by pressing the Delete key, and then type in a new cel number for that frame.

If you try to add a cel number to the cel column that does not exist in your animation, a warning display tells you that the cel does not exist in the Pencil Test animation.

4. Continue to create and modify the Exposure Sheet by using the mouse and the Enter key to add and correct information. Use the keyboard to add information and use the Backspace, Delete, and Ctrl-x keys to delete information.

If you want to add !Commands, simply click the mouse pointer in the Dial, Sound, and Comments column on the frame where you want the command to occur. Type in the command, making sure to follow the correct command format and syntax.

5. Once you've entered information to the Exposure Sheet, try running the animation to test your work. Animate your work by selecting Animate from the Project menu, from the command box at the bottom of the screen, or by pressing Alt-a. The animation will run according to the Exposure Sheet. To stop the animation and return to the Exposure Sheet, click either mouse button. If you're in the Pencil Test program and you want to run the animation according the Exposure Sheet, press Shift-a.

## Adjusting the Frame Rate

1. Click the left mouse button on the small box at the bottom of the Frame column.
2. The Frame Rate requester appears.
3. Select one of the provided frame rates, or click on the custom rate number and enter your own frame rate.
4. Select Exit & Animate to exit the Frame Rate requester and run your animation at the new frame rate. If you entered your own frame rate, select Enforce Frame Rate and click on Exit & Animate to be sure that the animation is running at the displayed rate.
5. Click either mouse button to stop the animation.
6. The selected frame rate is displayed in the small box located at the bottom of the Frame column.

## Exposure Sheet Editing Example

Here's a simple example of using the Exposure Sheet to control the sequence of cels in an animation. We're going to modify an existing animation of a character walking forward so it shuffles forward and backward.

1. While in the Pencil Program, load the Library animation file called 2LEGWALK.CFT. Hard disk users: This file is in the C:\DAS\LIBRARY subdirectory.  
Floppy disk users: This file is on the EXTRAS disk.



2. Press the F6 key to go to the Exposure Sheet for this animation. Notice how the cels are already assigned to every other frame.
3. Move down to the last frame (Frame 31). Click the left mouse button in the Dial, Sound, and Comments column next to Frame 31/Cel 16. Press Enter. Notice how two frames are added (the number of frames inserted each time you press Enter is determined by the number in the box at the bottom of the Cel column; the default setting is 2 frames); the cursor is now in the Cel column. Type 15 and press Enter. The cursor moves over to the Dial, Sound, and Comments column.
4. Press Enter again. This time two frames are added, along with the number 16 in the Cel column. The Exposure Sheet automatically inserts cel numbers sequentially, unless the last number in the Cel column is the last cel number in the Pencil Test animation. Press the Delete key twice to delete 16 and then type in 15. Frame 33 starts the backward motion of the walk.
5. Continue adding cel numbers in the Cel column in descending order until 1 is in the Cel column; you should be next to Frame 61. The bottom half of your Exposure Sheet should look like the one in Figure 4-7.

FRAME	CEL	DIAL, SOUND, AND COMMENTS (Cel: 1)	TIME: 00:02.02
31	16		
32			
33	15		
34			
35	14		
36			
37	13		
38			
39	12		
40			
41	11		
42			
43	10		
44			
45	9		
46			
47	8		
48			
49	7		
50			
51			
52			
53			
54			
55			
56			
57			
58			

24    2    Copy    Cut    Paste    Sparse    Search    Animate    Cel-Ed

*Figure 4-7. Exposure Sheet Example of Walking Animation*

6. Click on Animate to view the animation with your changes to the Exposure Sheet. The character should now shuffle forward and backward.
7. Click either mouse button to stop the animation.

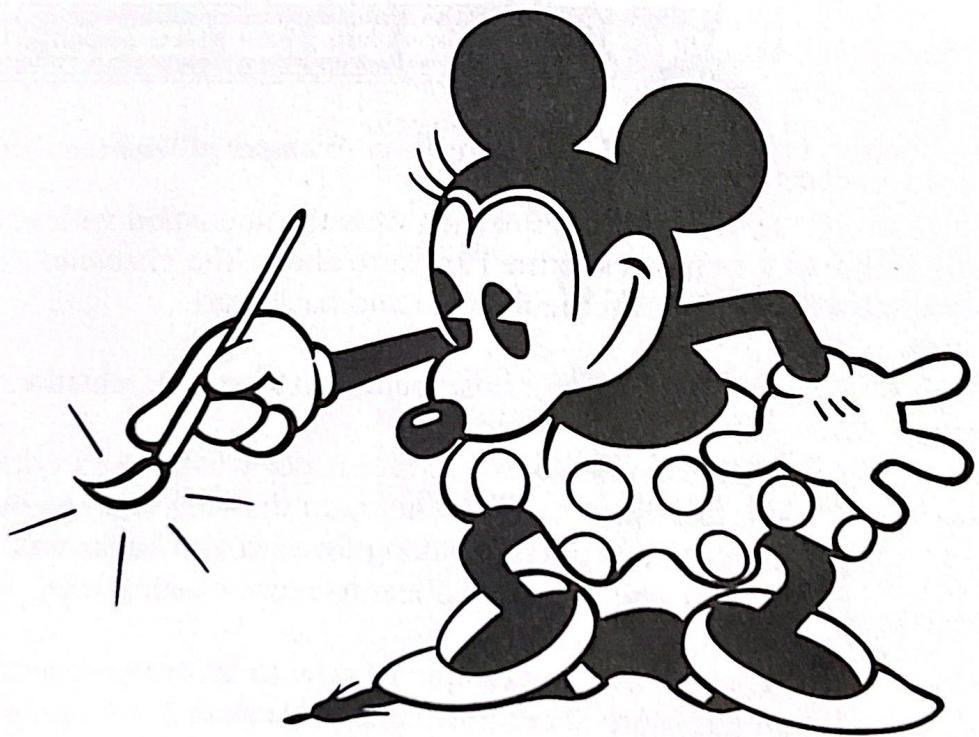
This example gives you an idea of what you can do with the Exposure Sheet. Rather than drawing every individual cel of the character walking forward and backward, you can use the Exposure Sheet to reuse existing cels.

You can find an example of how to incorporate sounds into an Exposure Sheet in Chapter 5: Lesson 3 - Creating a Complete Animation of the Getting Started manual.



## CHAPTER 5

# Ink & Paint



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## Ink & Paint

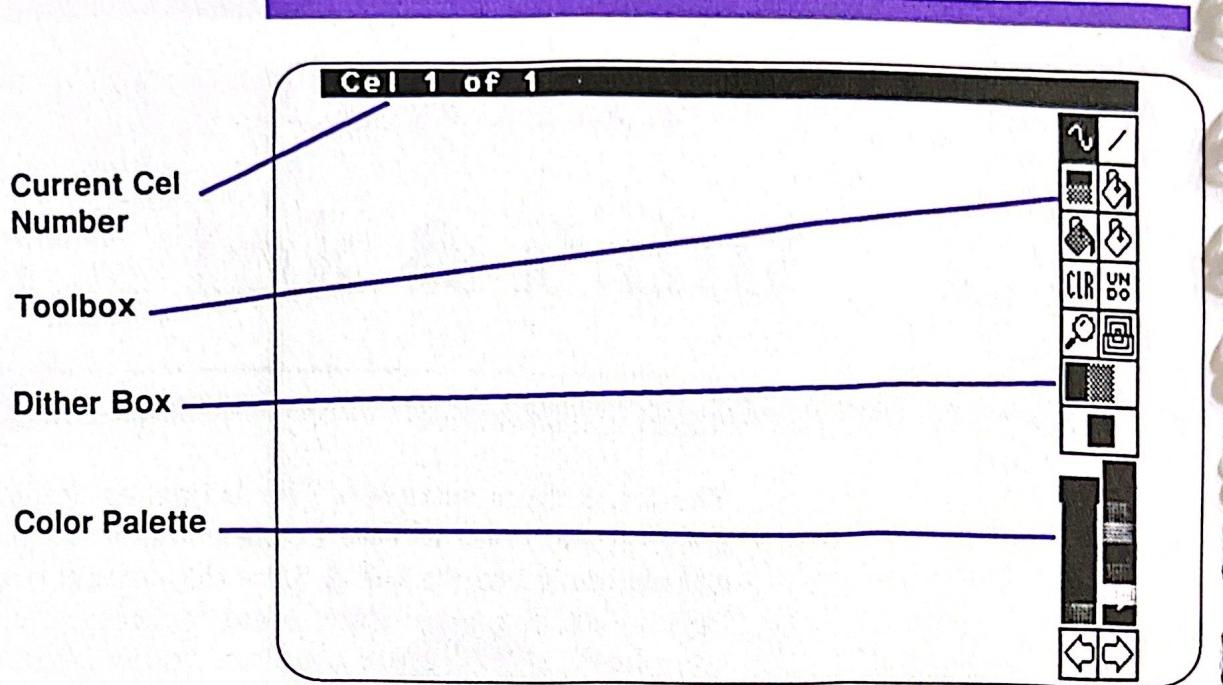
The Ink & Paint section of The Animation Studio program lets you add color to your finished animation. Just as full animations go to the Ink & Paint department once the Pencil Test, Exposure Sheets, and other important steps are completed, so does your creation. You've already created a Pencil Test — working from ideas, through roughs, and finally testing your Pencil Test — to the Exposure Sheet where you created the timing and specified the sound effects (if you have the necessary sound equipment). This chapter explains the Ink & Paint features and options available for you to add color and other finishing touches to your animation.

---

## Ink & Paint Menus

The Ink & Paint screen is similar to the Pencil Test screen. The menu bar at the top of the screen displays the current cel number. The Toolbox is located on the right side of the screen.





*Figure 5-1. Ink & Paint Screen*

The grid of colors under the Toolbox is the color palette, displaying the current palette colors. You can access the Ink & Paint menus by moving your mouse pointer to the menu bar and holding the right mouse button down. The menu titles are:

- *Project*
- *Edit*
- *Camera*
- *Tools*
- *Preferences*

---

You should be familiar with most of these menus from the Pencil Test and Exposure Sheet sections of the program. The Project menu lets you perform basic Ink & Paint functions such as opening Pencil Test animations in Ink & Paint, and saving your work. The Edit menu provides options for editing the current Ink & Paint animation. The Camera menu lists options for a Frisket technique used when loading files and adding backgrounds to your animation.

The Tools menu lists some of the tools displayed in the Toolbox and their corresponding keyboard commands. The Preferences menu lets you turn the Toolbox off and on, provides a filter option for output to video (in VGA and MCGA modes), and allows you to set the screen mode used in your animation.

---

## Ink & Paint Project Menu

To display the Project menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button, and highlight Project. Move the mouse down to highlight the menu item you want and then release the mouse button to select it.



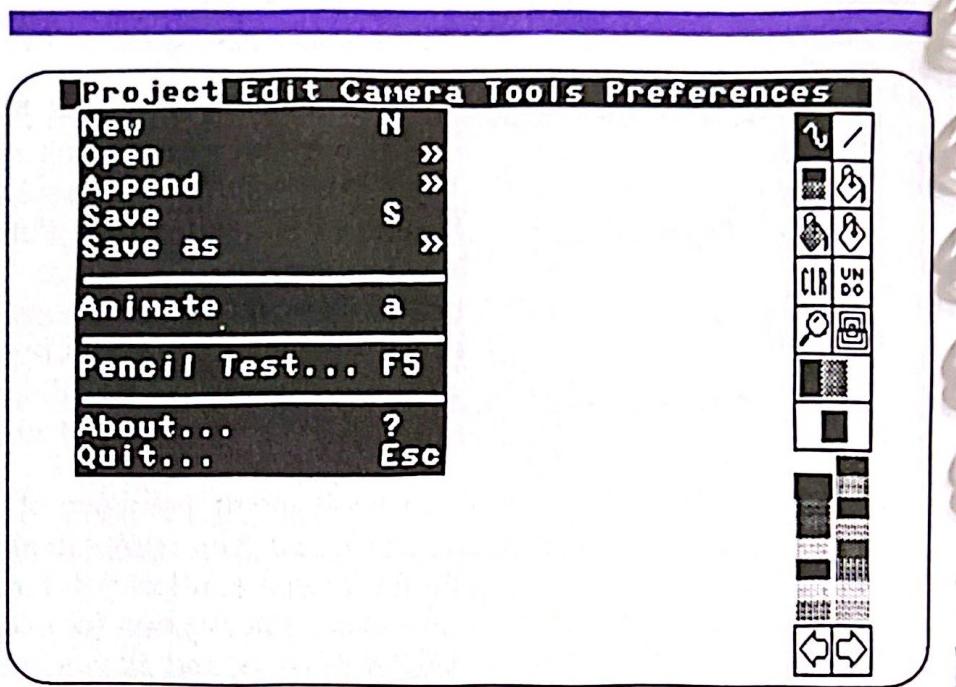


Figure 5-2. Ink & Paint Project Menu

### New

Select New to clear the current cels. A requester asks if you're sure you want to clear the current cels.

Keyboard command: Shift-n

### Open

Select Open to load a Pencil Test animation or previously saved Ink & Paint file into Ink & Paint. This option is similar to the Pencil Test Open option. The Open menu has a submenu that lists the file formats you can open:

- *IFF*
- *Anim*
- *CFast*

Once you select the file format, the Open requester displays:

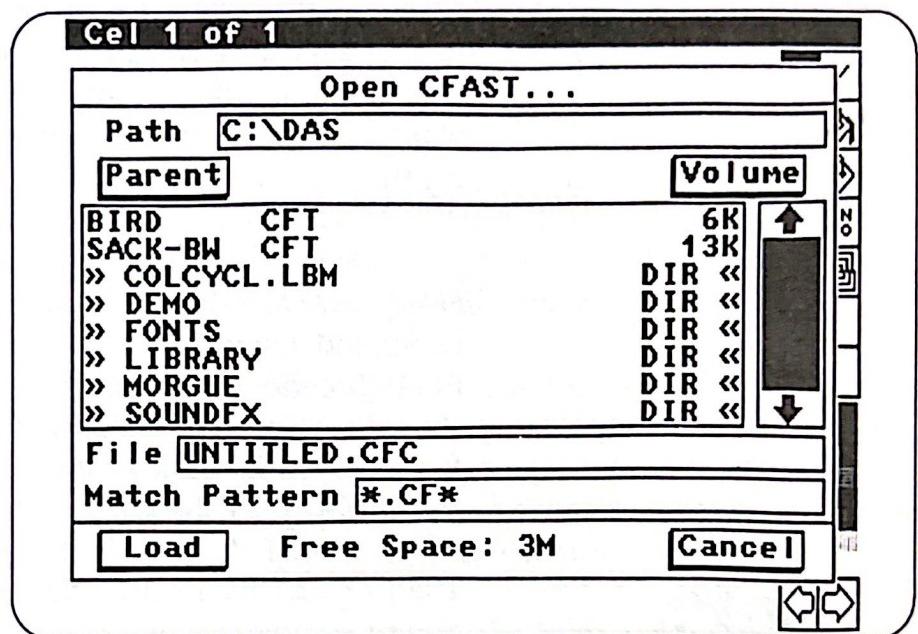


Figure 5-3. Open Requester

This requester is similar to the Open requester described in the Pencil Test chapter. Use Parent and Volume to move around on the disks to locate other files you may want to open. Select a file by clicking on the file name displayed in the listing and then click on Load, or double-click on the file name. The amount of space available on the disk appears at the bottom of the requester. Press F1 to check the size of the file against the amount of free memory available on your system before loading the file.

Keyboard command: o (to open CFast file)



## **Append**

Select Append to add a file to the animation. The submenu lets you specify the file format you want to load. The Append requester looks and works like the Open requester. The selected file is added to the end of the current file in Ink & Paint. Use the Append option if you want to build a large animation out of a number of smaller files.

## **Save**

Select Save to save the entire color animation. The Save command assumes that you've previously named the file through either the Open or Save As commands and that it should save the file under that name. If this is an unnamed file, you're asked if it's OK to save the current file as UNTITLED.LBM. To give the file a name other than UNTITLED.LBM, select Cancel to exit the Save requester. Then select Save As from the Project menu and enter a different name.

Keyboard command: Shift-s

Once a file has a name, selecting Save saves the latest changes or additions to the file, and saves the file in the format previously specified.

## **Save As**

This command saves a new animation or saves an animation under a new name. You can save an animation as an IFF, Anim, or CFast file. We recommend that you assign a new file name to the Ink & Paint color animation so the Pencil Test file remains intact; this way, if you ever want to revise the Pencil Test file, you can still open it in the Pencil Test program. You should also save the file with a .CFC extension so The Animation Studio can recognize the file as a CFast color animation.

- Use IFF file format to save each cel in an animation as an individual file. This allows other paint programs to open each cel individually since the cels are saved in their own files. IFF files are saved with the .LBM file extension.
- Anim is a common Amiga file format. Use Anim file format to save files that you will want to use in other programs that acknowledge this file format. Anim files are saved with the .ANM file extension.
- CFast is an efficient file format specially designed for The Animation Studio. In most cases, you will want to select the CFast file format to save the animation as a single file for use with The Animation Studio. CFast files are saved with the .CFC file extension.

When you select a file format, the Save As requester appears.



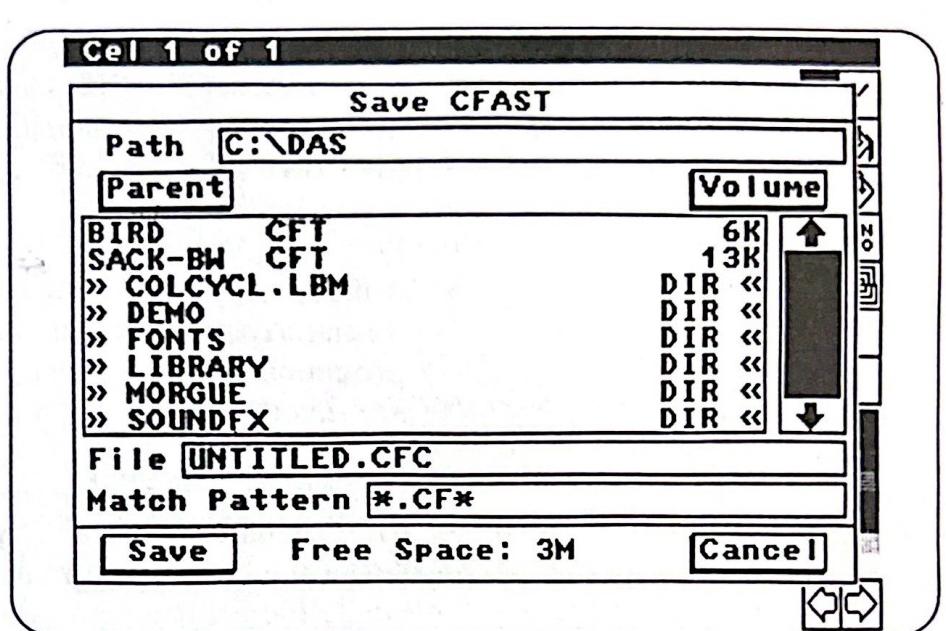


Figure 5-4. Save As Requester

Click on Volume and select the name of the disk where you want the file to be saved from the requester window; or you can click in the Path edit field and type in a drive and press Enter (i.e., B:\). If you're trying to save a file and there's not enough room to save it, a message window tells you that the current disk is full. Click on OK, and save the file to a new, formatted disk.

If the current file has never been saved before, UNTITLED appears in the file name box (with the file extension of the type of file you chose to save it as). Position the cursor in the file name box on the "U" in UNTITLED and click the left mouse button; a black box appears. Press the Delete key until the word UNTITLED is erased. Then type in a new file name. Make sure that your file has the correct file extension; this allows The Animation Studio to identify the file.

The requester displays the file format at the top of the requester.

Keyboard command: w (to save as CFast)

## Secure

Select Save As >> Secure to “lock” a completed animation to prevent tampering or modification to the file. Secured files can only be shown using the Flick projector program located on the EXTRAS disk. Flick lets you show an animation without having to enter The Animation Studio program. Flick is also the only way to view a color animation with sound as determined by its Exposure Sheet. Do not select Secure if you need to make changes to an animation. After you select Save As >> Secure, a requester appears that lets you enter an artist’s note about your secured file. The artist’s note displays when you use Flick to show the animation.

If you think you may need to make changes to a file that you want to secure, you should secure the file under a different name. For instance, let’s say you open a file named FLIP. You can select Save As >> Secure and then save the file under the new name of FLIP2. FLIP2 is now a secured file that can’t be modified, but you still have the original FLIP file that can be modified.

Secured files are saved with an .SEC file extension.

## Animate

Select Animate to view the current cels. Selecting Animate in Ink & Paint runs the cels in the current cel order, not by the order set in the Exposure Sheet.

Keyboard command: a



---

If you want to animate the current file according to the timing established in the Exposure Sheet, see the “How to Animate an Ink & Paint Animation” section in this chapter.

## Pencil Test

Select Pencil Test to return to the Pencil Test screen. This option is only available if you started Ink & Paint from the Pencil Test.

Keyboard command: F5

## About

About displays a window containing the software version number and copyright information.

Keyboard command: Shift-/ or ?

## Quit

Select Quit to exit the Ink & Paint program and return to DOS.

Keyboard command: Esc

---

## Ink & Paint Edit Menu

To display the Edit menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button, and highlight Edit. Move the mouse down to highlight the menu item you want and then release the mouse button to select it.

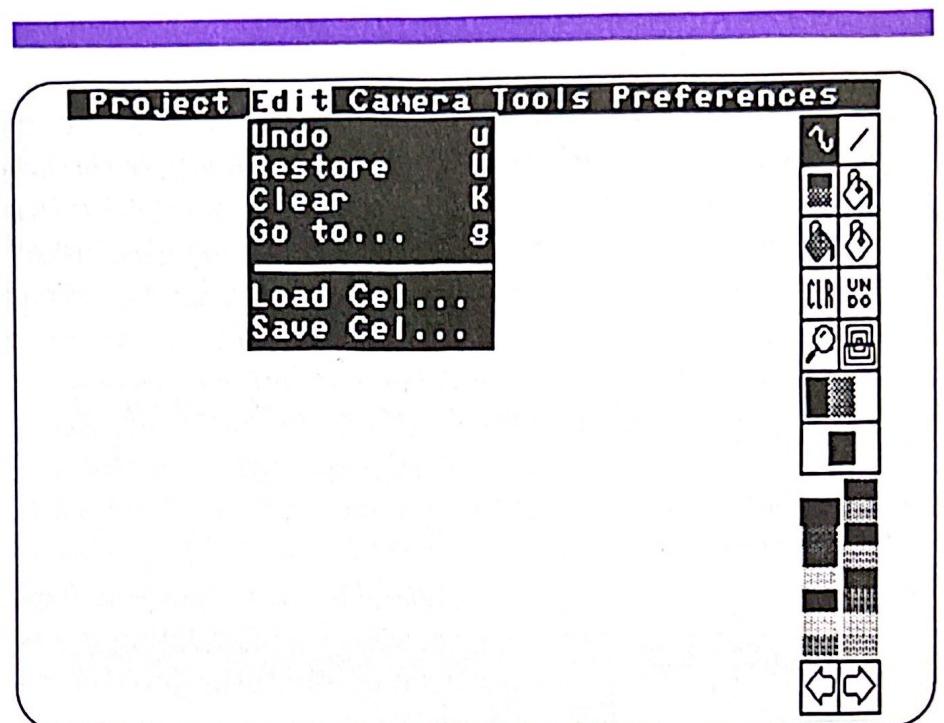


Figure 5-5. Ink & Paint Edit Menu

## Undo

Select Undo to erase your last action.

Keyboard command: u

## Restore

Restore returns the cel to its original state (which is how it appeared before you made any changes). Restore erases all changes made to a drawing, while Undo only erases the last change made. Restore must be used before you go to another cel or run the animation.

Keyboard command: Shift-u



## **Clear**

Select Clear to clear the current screen and fill it with the background color (the color not in the Current Colors box, which is below the Dither box). If the Frisket is set, the areas protected by the Frisket will not be cleared. In order to completely clear the current cel if the Frisket is set, disable the Frisket by selecting **Frisket >> In Use** from the Camera menu.

Keyboard command: Shift-k

## **Go To**

Select Go To to move to a specified cel. This is similar to the Go To command in the Pencil Test Edit menu. The Go To requester asks you to enter the cel number you want to move to.

Keyboard command: g

## **Load Cel**

Select Load Cel to load a single IFF picture as a background. A requester appears that lets you select the file name you want to load. Once you select a file, another requester appears, asking you to enter the specific cel numbers to load the background to. Enter the cel numbers and select OK to load the picture.

If the Frisket is set, the selected picture loads under the Frisket colors. If Auto Remap is on and you are mapping to the foreground, the background remaps to the colors set by the Palette. Refer to the Camera section for more information on this.



## Save Cel

Select Save Cel from the Edit menu to save the current cel as a single IFF file. The Ink & Paint Save Cel command is similar to the Pencil Test Save Cel command. If the file is too large to be completely saved on the current disk, save the file on a blank, formatted disk.

## Ink & Paint Tools Menu

The drawing tools in Ink & Paint let you edit or add to your Pencil Test animation. These tools are similar to the Pencil Test tools.

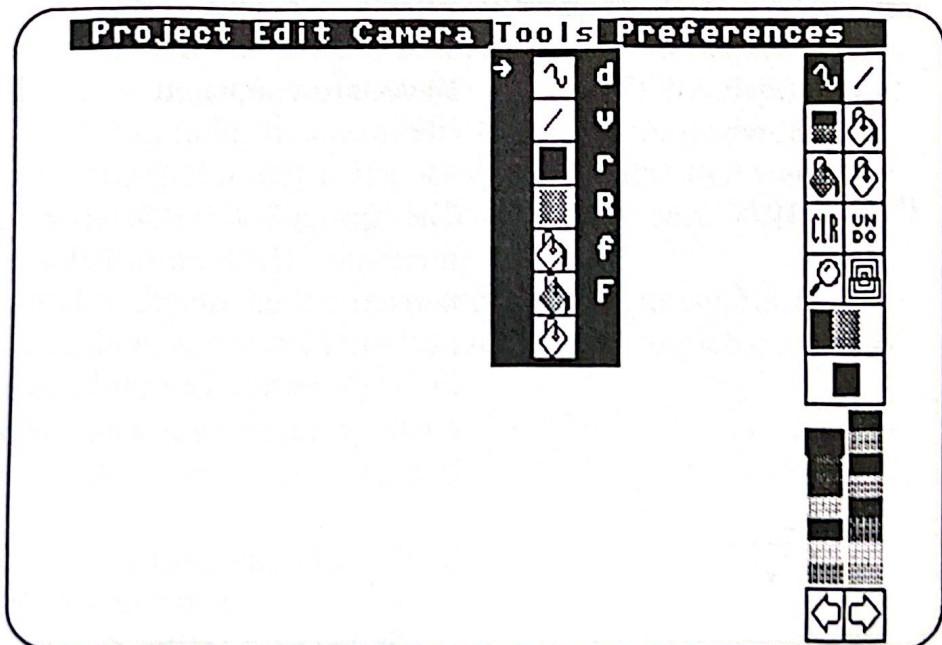


Figure 5-6. Ink & Paint Tools Menu



## Freehand Line



Select the Freehand Line tool to patch areas in the drawing. Use the left mouse button to create lines with the foreground color (the color in the center of Current Colors box) and the right mouse button to draw lines with the background color.

Keyboard command: d

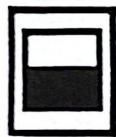
## Line



Select the Line tool to create straight lines. Use the left mouse button to create lines with the foreground color and the right mouse button to draw lines with the background color.

Keyboard command: v

## Rectangle



The top half of the Rectangle tool lets you create a filled rectangle. The bottom half creates a rectangle with the current dither pattern. When creating a filled rectangle, press the left mouse button to use the foreground color and the right mouse button to use the background color. When creating a rectangle with a dither pattern, press either mouse button.

Keyboard commands:

- |         |                  |
|---------|------------------|
| r       | Solid rectangle  |
| Shift-r | Dither rectangle |

## Fill On Color



Select the Fill On Color tool to fill an enclosed shape with color. Select a color from the palette or the screen and move the mouse pointer to the cel. Click on the area you want to fill. Be sure that the shape is completely closed or the color will "leak" outside the selected area. Use the Freehand Line tool to patch any gaps in the line. Remember that you can use Undo to undo a fill if necessary.

The Fill On Color tool fills to the boundaries of an enclosed shape. Let's say you have two outline circles that overlap. You select the Fill On Color tool and then click on one of the circles — the color will fill the shape until it reaches the boundaries of that shape. In this example, the color will not fill the entire circle because the other circle overlaps it, and the Fill On Color function only looks for the immediate boundaries of a shape. It does not recognize that there are two separate overlapping circles on the screen.

Click on the enclosed area using the left mouse button to fill with the foreground color, or the right mouse button to fill with the background color.

Keyboard command: f



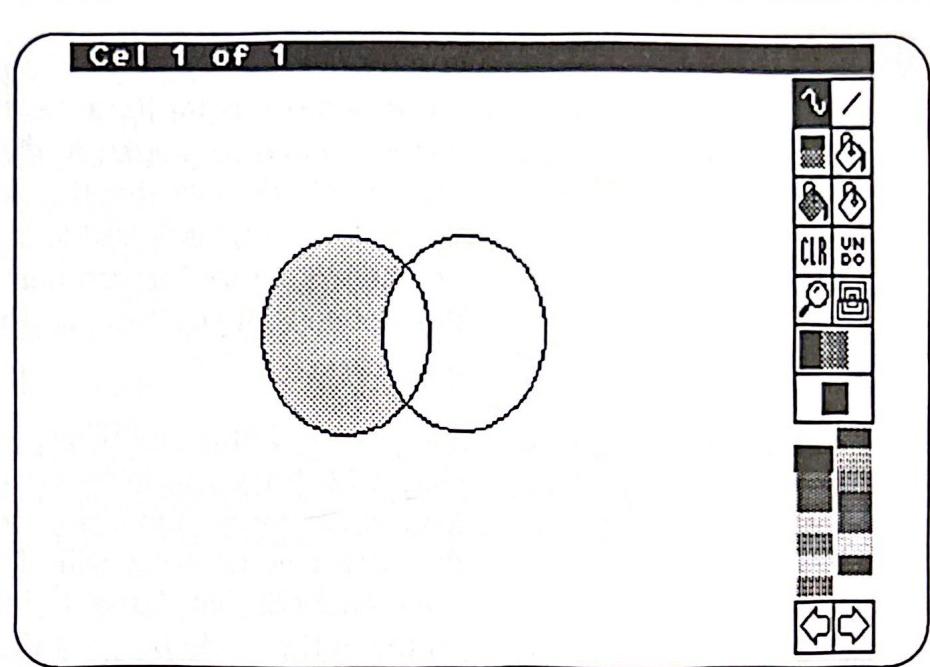


Figure 5-7. Example of Fill On Color

## Dither Fill

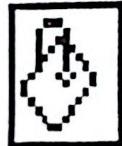


Select the Dither Fill tool to fill a selected area of the animation with the dithered colors. Dithered colors are colors created from two other selected colors using the dither box located below the Magnify and Zoom tools.

To create a dithered color:

1. Click the left mouse button on the left side of the Dither box. The cursor turns into an arrow with the word "Pick" beneath it.
2. Choose a color from the palette. That color displays on the left side of the Dither box.

## Fill To Color



3. Click the left mouse button on the right side of the Dither box and choose the second color from the palette. Notice that the middle of the Dither box now displays the new color created from the two colors you selected from the palette.

Use this technique to add texture to the image.

Once you've created the dither pattern you want, move the mouse pointer to the cel area and click on the area you want to fill.

Keyboard command: Shift-f

Select the Fill To Color tool (the bucket icon that isn't pouring) to fill a shape up to a certain color boundary. An arrow appears with "Pick" below it; position the tip of the arrow on a color in the palette and click the left mouse button to select the color from the screen. Then click in the enclosed area you want to fill; it will fill until it reaches the boundaries of the color you just selected. Let's say that you have a yellow outline circle and an overlapping blue outline circle on screen. Select the Fill To Color tool and blue from the color palette. Click in the blue outline circle. The blue circle fills completely with your foreground color, even though the yellow circle and blue circle intersect. The Fill On Color tool would not have filled the entire blue circle.

Click on the enclosed area with the left mouse button to fill with the foreground color, or the right mouse button to fill with the background color.



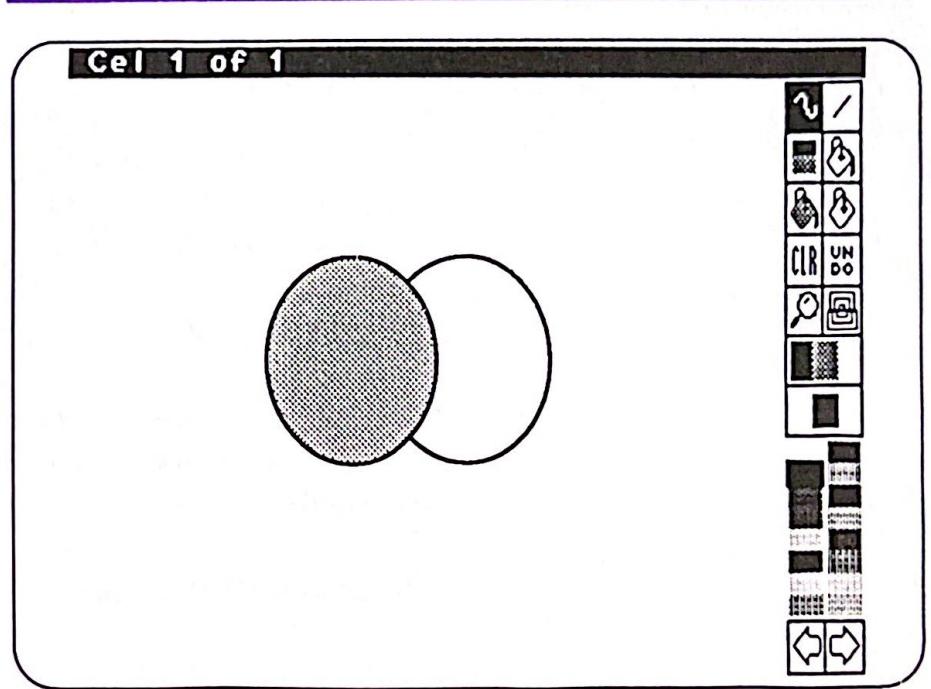


Figure 5-8. Example of Fill To Color

## CLR



This is the same as selecting Clear from the Edit menu. The current cel is erased and filled with the background color.

Keyboard command: Shift-k

## Undo



Select Undo to erase your last action.

Keyboard command: u

## Magnify



Select Magnify to enlarge a selected area of the screen. Use the mouse to pixel edit the image where needed. To move the image in the Magnify window, hold the Shift key down and press any arrow key to move in that direction. Click on the Magnify tool again to return the screen to its unmagnified state.

Keyboard command: m

## Zoom

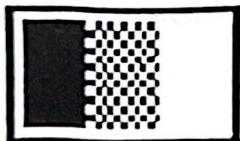


Select Zoom while an area of the image is magnified. Clicking on the top half of the Zoom icon zooms in on the image in the magnify window and clicking on the bottom half of the Zoom tool lets you zoom out from the image.

Keyboard commands:

Shift- or >      Zoom in  
Shift- or <      Zoom out

## Dither Box

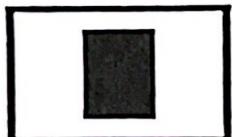


The Dither box displays a dithered color that you create. Dithering is a technique that creates a new color by alternating the pixels of two different colors. The dither pattern in the middle of the box looks like a checkerboard. The Dither box has a right and left side. Each side displays the colors you select from the palette, and the middle displays the resulting dither pattern. For instructions on creating dithered colors, refer to the Dither Fill tool in this chapter. You can get better dithered results when you use two colors that are similar, as opposed to two colors that are completely different. If you choose to use two colors that are very different, the resulting dither pattern will have a checkerboard look.



## Color Palette

The Color Palette is the collection of small multicolored boxes located below the tools and above the Back and Forward Arrows.



To select a foreground color:

1. Move the pointer onto a color and click the left mouse button. This color appears in the center of the Current Colors box below the Dither box.
2. Another way to select a foreground color is to click on the center of the Current Colors box; an arrow appears with "Pick" below it; position the tip of the arrow on a color in the palette and click the left mouse button to select it.
3. You can also press [ (left bracket) or ] (right bracket) to scroll through the foreground colors.

To select a background color:

1. Click on a color from the palette for your background color.
2. Move the pointer to the outer area of the Current Colors box and click the left mouse button; the entire box should fill with the color you selected.
3. Move the pointer back to the palette and click on the color you want to use as the foreground color; the foreground color appears as a square in the center of the Current Colors box.

MCGA users: Only part of the palette appears in the Toolbox. To access the entire palette, press and hold the left mouse button down on the color palette; the complete color palette opens to the left of the toolbox. While still holding the mouse button down, move the square over to the color you want and then release the mouse button to select it. MCGA users can also press Shift-[ and Shift-] to scroll through the palettes.

---

## Ink & Paint Camera Menu

The Camera menu provides powerful tools to help you complete your animation. The Frisket technique lets you bring in backgrounds from other paint applications or other Animation Studio files and place the color version of your animation on top of the painted background. The term “frisket” is an art term that describes the masking technique used on finished artwork to prevent areas covered by the frisket from getting damaged by paint.



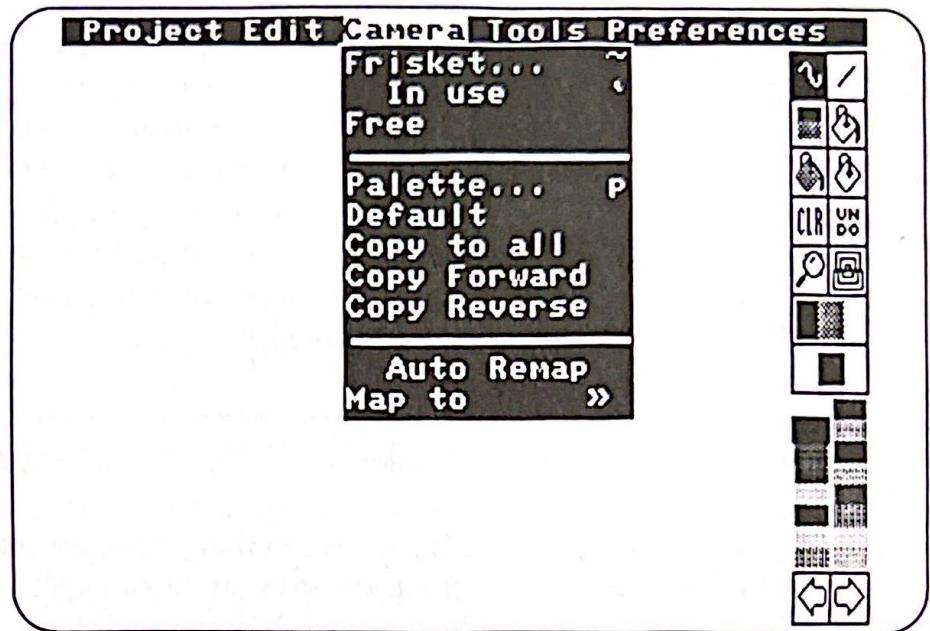


Figure 5-9. Ink & Paint Camera Menu

## Frisket

Select Frisket to display the Frisket requester, which lets you select the colors to form the frisket (commonly known as the mask or stencil in animation). The colors you select should be the ones used in the foreground.

Think of frisketing as a way of “protecting” certain colors. Let’s say you draw a row of house using the colors yellow, green and brown. Now that it’s a finished drawing, you’re ready to drop a blue sky into the background. The blue should fill the entire cel except where the houses are.

First you'd open the Frisket requester and click on the colors yellow, green, brown, and black — these are the colors that make up your foreground drawing (In most cases, you should select black in the frisket since this is the color you probably drew the outlines with). When you've selected the colors you want to frisket, click on Use to close the requester. Now click on the Rectangle tool, select blue, and then draw a rectangle that covers the entire screen. Notice that the rectangle does not "draw over" the houses; that's because you specified the colors used in the houses be frisketed (or "protected").

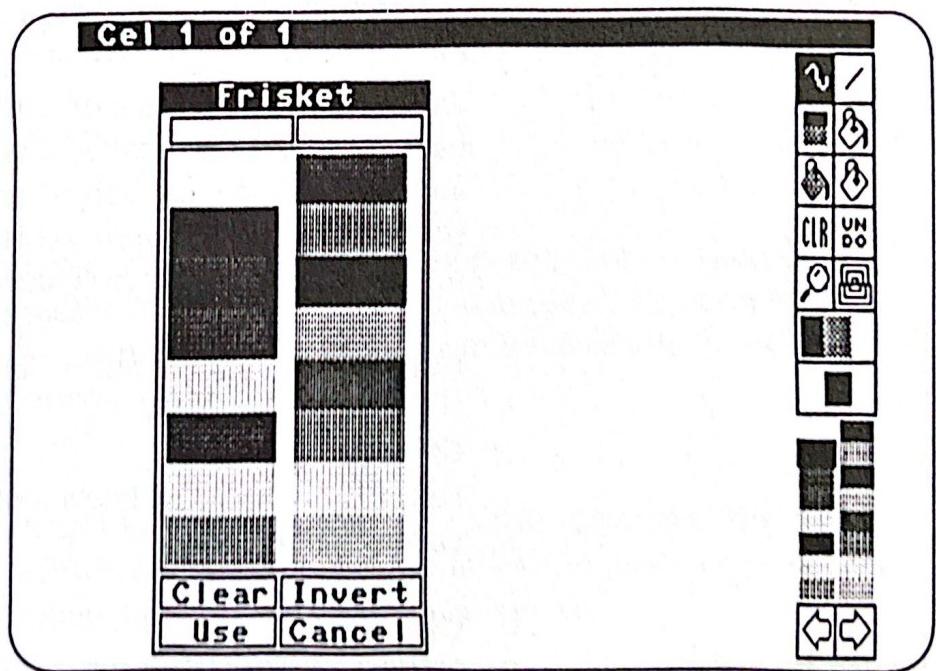


Figure 5-10. Frisket Requester

The Frisket requester shows the current palette, and four function boxes at the bottom of the window: Clear, Use, Invert, and Cancel.



To select a color, use the left mouse button and click on the color you want in the requester or in the Toolbox. A marker to the right of the color marks the selected color. You can select as many colors as you need to create a frisket for your animation.

The white boxes at the top of each vertical column of colors let you instantly select all the colors in that column that are not selected, and automatically deselects the colors that are selected. For example, if the last two colors at the bottom of the first column are selected, and you click on the white box at the top of that column, the first six colors are now selected, and the last two colors are not.

Once the frisket is selected and turned on, you can add backgrounds with multiple colors. The background will automatically display behind animation cels if the frisket is set up correctly. If the frisket is not set up correctly, parts of the background may show through the animation.

Keyboard command: Shift-` or ~

### **Clear**

Select Clear from the bottom of the Frisket requester to deselect all colors.

### **Use**

Select Use to confirm the current frisket setup and turn the frisket function on. The Frisket requester closes and the word Frisket appears in parentheses on the menu bar.

### **Invert**

Select Invert to reverse the current frisket. All colors that were not selected are selected, and colors that were selected are now deselected. This option is useful if you need to select many colors from the palette; select the colors you will not be using first and then select Invert.

### **Cancel**

Select Cancel to clear all changes you made to the Frisket requester since it was opened. The Frisket requester closes and ignores any changes made.

## **In Use**

Select In Use to toggle the frisket option off and on.

Keyboard command:

## **Free**

Select Free to clear the memory required to store the frisket. When the frisket is not in use, it's a good idea to select Free to make more memory available for other operations.

## **Palette**

Select Palette to display the Palette requester. The Palette requester is made up of the following parts: color sliders, commands, color palette, and ranges.

Refer to the “Creating Color Palettes” section of this chapter for complete information on the Palette Requester and how to use it.

Keyboard command: p



## **Default**

Select Default to reset the color palette to the default palette.

## **Copy To All**

This copies the current palette to all the palettes used in the animation, including the Range palettes. Remember, each cel can have its own palette. Selecting this option sets all cels to the current palette.

## **Copy Forward**

Select Copy Forward to copy the palette used on the current cel to all of the following cels in the animation.

## **Copy Reverse**

Select Copy Reverse to copy the palette used on the current cel to all of the previous cels in the animation.

## **Auto Remap**

Select Auto Remap to automatically remap colors in your animation or background (select this before loading your background). If you simply load a background with Auto Remap off, your preloaded animation will be re-colored using the palette from the background. To avoid this problem, either:

- Make sure you use the same palette in your animation and your background.
- Activate Auto Remap, and set the map option to Map to Foreground. This will cause the background picture to be recolored using the palette in your preloaded animation.

## **Map To**

Select Map To to establish the direction of the remap.

### **Foreground**

Select Foreground to force the colors used in the background to be converted to the colors used in the animation.

### **Background**

Select Background to force the colors of the animation to be converted to the colors used in the background.

---

## **Ink & Paint Preferences Menu**



To display the Preferences menu, move the mouse pointer to the menu bar at the top of the screen, hold down the right mouse button, and highlight Preferences. Move the mouse down to highlight the menu item you want and then release the mouse button to select it.



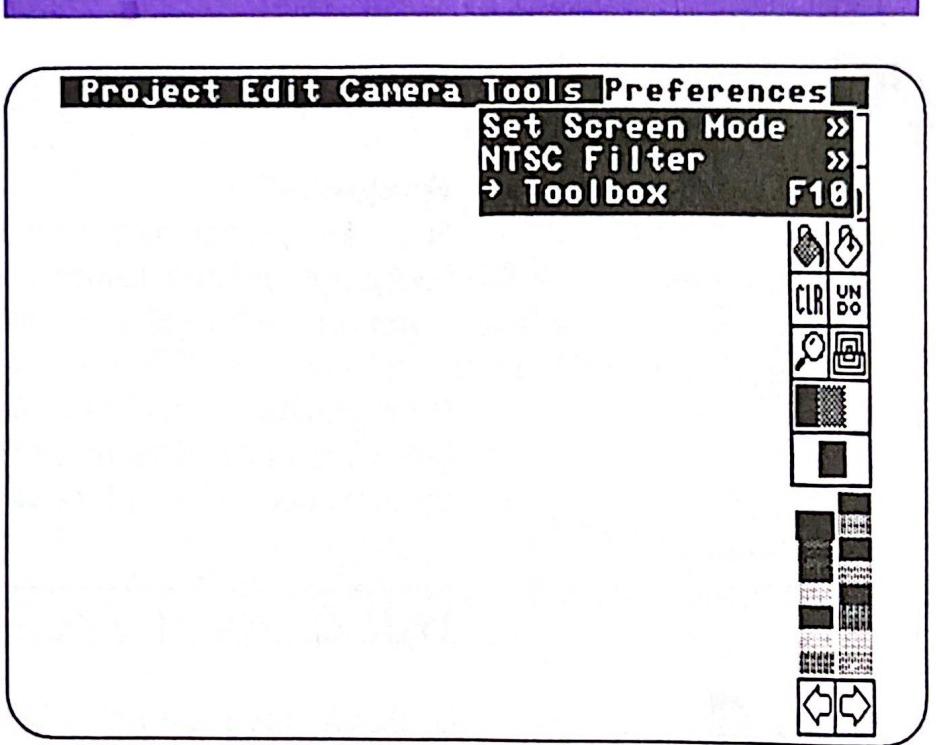


Figure 5-11. Ink & Paint Preferences Menu

## Set Screen Mode

The screen modes you can choose from are CGA, Tandy, EGA, VGA, and MCGA.

## NTSC Filter

The NTSC filter is available only with VGA and MCGA graphics. Select the NTSC Filter when you're ready to output your animation to video. The NTSC equipment (National Television Standards Committee, the television system used in North America) can only handle a fraction of the colors offered by VGA or MCGA graphics. Your computer's white is too bright and black is too dark to be accurately reproduced on NTSC video. Colors outside the range of NTSC capabilities will display differently on an NTSC video monitor (vibrating and bleeding are common problems). The NTSC filter cuts off the highs and lows from the Red, Green, and Blue values which make up a color.

To see the effect, select NTSC Filter >> In Use from the Preferences menu. Then select Palette from the Camera menu. Move the RGB sliders; notice how you can't bring the sliders past the ranges set by the NTSC filter.

Select Set to display the NTSC Color Filter requester. This lets you set the range of colors to filter. The default standard setting is 7 (low) to 80 (high). Completely unfiltered colors would be 0 (low) to 100 (high). Adjust the range in the requester to match the capabilities of your video equipment. The NTSC filter affects the palette of every cel.

To disable the NTSC Color Filter, select NTSC Filter >> In Use to toggle the filter off. You may want to readjust your cels' palettes or select Default from the Camera menu.

## Toolbox

Select Toolbox to turn the Toolbox display off and on. Press F10 on your keyboard to toggle the menu bar and Toolbox off and on. Press F9 to toggle the menu bar only.

## Ink & Paint Help Screen

Press Alt-h to open up the Ink & Paint Help screen. The Ink & Paint help window shows the use of the arrow and function keys. Click on OK at the bottom of the window to close the Help screen.



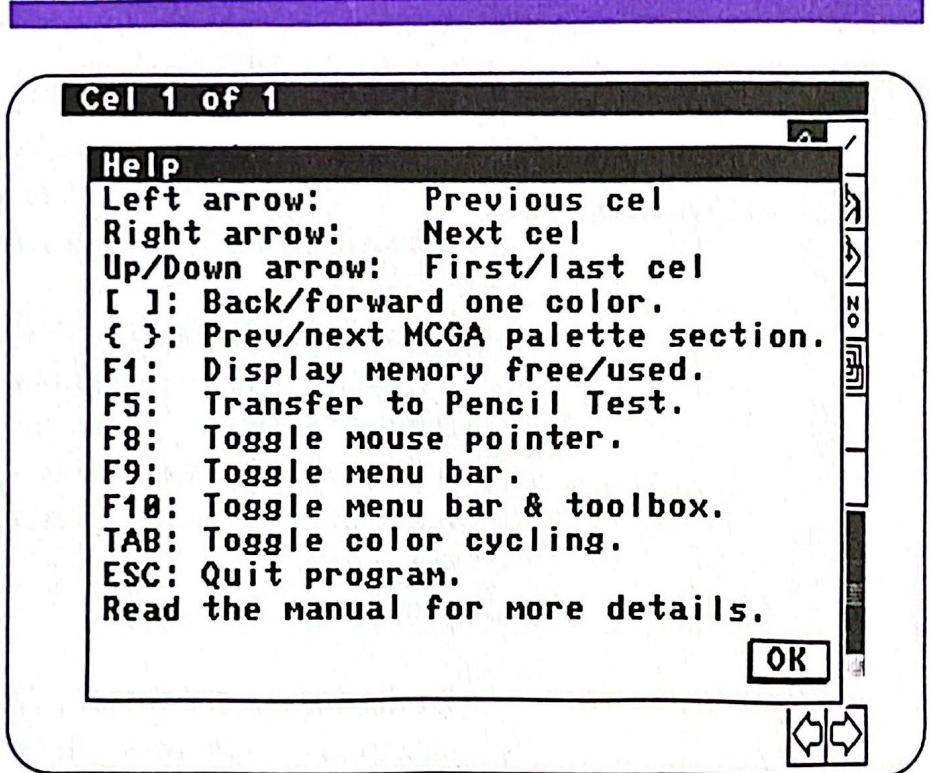


Figure 5-12. Ink & Paint Help Screen

### Back/Forward One Cel

Press the left arrow key to move back one cel. Press the right arrow key to move forward one cel.

### First/Last Cel

Press the up arrow key to move to the first cel of the animation. Press the down arrow key to move to the last cel of the animation.

### Back/Forward One Color

Press [ ] (the left or right bracket) to move forward or back one color on the palette.

### Previous/Next MCGA Palette

Press { } (Shift-[ or Shift-]) to see different sections of the color palette (for MCGA users only).

## **Display Memory Free/Used**

Press the F1 key to display the amount of free main memory, and the amount currently used by the program. This also displays the amount of expanded memory available and being used.

## **Transfer to Pencil Test**

Press the F5 key to enter the Pencil Test program. This function key only works if you entered Ink & Paint from the DAS program. If you've been working on an Ink & Paint drawing, you must save it before transferring to Pencil Test; otherwise, all your Ink & Paint work will be lost.

## **Toggle Mouse Pointer**

Press the F8 key to toggle the screen display of the mouse pointer off and on.

## **Toggle Menu Bar**

Press the F9 key to toggle the display of the menu bar off and on. This is useful if you want to see the upper area of the cel. Even when the menu bar is not visible, you can still access menus by moving the pointer to the top of the screen and pressing the right mouse button.

## **Toggle Menu Bar & Toolbox**

Press the F10 key to toggle the menu bar and Toolbox off and on. This lets you see the entire cel.

## **Toggle Color Cycling**

Press Tab to toggle color cycling on and off.

## **Quit Program**

Press Esc to quit The Animation Studio and return to DOS.



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## How to Ink & Paint an Animation

To add color to a Pencil Test animation using fills:

1. Select Open from the Project menu.
2. Select the Pencil Test file you want to paint by double-clicking on the file name. The file opens in Ink & Paint.
3. Be sure that the objects or characters that you want to fill are “closed.” Check to see that the lines and shapes that form each area have ends that meet. To check this, use the Magnify and Zoom tools in the Toolbox. Use the pixel edit technique described in the Pencil Test chapter or use the Freehand Line tool to modify the image.
4. Select a color from the palette by clicking on it with the left mouse button.
5. Select the type of fill by clicking on the tool in the Toolbox.
6. Move the mouse pointer to the image on screen and click on the area or object that you want to fill.
7. Use the Freehand and Line tools to make minor modifications. You can draw a line in any color; simply select the line tool and then click on a color.

Each cel of the animation has to be colored separately. Use the Back and Forward Arrow tools or left and right arrow keys on the keyboard to move through the sequence of cels. You can also add color to your animation using the drawing tools in the Toolbox. Each cel also has its own palette. If you want to use the same palette throughout the animation, select Copy To All from the Camera menu.

If you decide to change a color used in your animation, select Palette from the Camera menu. The Palette requester lets you modify your color selection. You'll find complete details on working with the palette in the "Creating Color Palettes" section.

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## How to Animate an Ink & Paint Animation

There are two ways to run an Ink & Paint animation:

- Select Animate to view the current cels. Selecting Animate in Ink & Paint runs the cels in the current cel order, not by the order set in the Exposure Sheet.
- Use the program called Flick to run the animation in the order set in the Exposure Sheet.



To use the Flick program:

1. Exit The Animation Studio.
2. Make sure you're at the DOS prompt and in the DAS subdirectory. Type **FLICK** followed by the file name and then press Enter. Make sure you insert a space between the command and the file name. For example, if your animation is called RUN.CFC, you'd type **FLICK RUN.CFC** and press Enter.
  - You must be in the subdirectory that the Flick program is in to run it; however, you can set the path to any subdirectory that the Ink & Paint file is in. For instance, if your RUN.CFC file is in a subdirectory called INK, you would type **FLICK C:\INK\RUN.CFC** to have the Flick program animate the file.
  - You can enter a command line argument to force a certain graphics mode. The available options are: -CGA, -EGA, -TANDY, -MCGA, and -VGA. For example, if you want to view the RUN.CFC file in EGA mode, you would type **FLICK -EGA RUN.CFC**. If RUN.CFC were in the INK subdirectory, you'd type **FLICK -EGA C:\INK\RUN.CFC**. You are not required to enter a command line argument. The Flick program will detect the best graphics mode to show the animation in. Use the command line argument only if you want to override the graphics mode Flick detects.

- Secured Ink & Paint files have an .SEC file extension. Unsecured Ink & Paint files have a .CFC file extension.
  - Floppy disk users: After you exit The Animation Studio, insert the EXTRAS disk in your floppy disk drive. At the DOS prompt, type FLICK followed by the file name. You're told that the file can't be found and you're given the option Abort, Retry, Fail?. Remove the EXTRAS disk, insert the disk that your Ink & Paint animation is on, and then press R (Retry) to run the animation.
3. Click on either of the mouse buttons or press Enter to stop the animation.

In Ink & Paint and Flick, 640x480 animations (VGA) may flicker. This screen resolution cannot be double-buffered, as opposed to lower VGA resolutions which can be double-buffered. Double-buffered means that the computer can draw in memory the picture that isn't currently displayed, and then take this "completed" picture out of memory to display it on your monitor. As it displays this picture, it is drawing in memory the next picture to be displayed.

The flickering effect can be minimized by: 1) using a slower frame rate, 2) using a lower resolution, or 3) using a faster computer (more MHZ).

The Sound Source provides high-quality audio. However, rapidly changing colors on the screen may interfere with its sound quality. This is most noticeable in MCGA animations. Static can be reduced by: 1) using the same palette on most cels, or 2) reducing, slowing, or eliminating color cycling.



## Creating Color Palettes

You can create your own palettes; the limitation on the depth of the palette is determined by your graphics card. From a selection of 262,144 colors, MCGA users can create a palette of 256 colors while VGA users can create a palette of 16 colors. EGA users in 640x350 resolution can choose 16 colors from a total of 64. EGA and Tandy Graphics users at lower resolutions have 16 colors. CGA users have two different color palettes: black, white, cyan, and violet or black, green, red, and yellow (with either palette choice, the background will be black).

You can change and modify the colors, and create new palettes through the Palette requester. The Animation Studio lets you create a separate color palette for each cel. To open the Palette requester, select Palette from the Camera menu.

Keyboard command: p

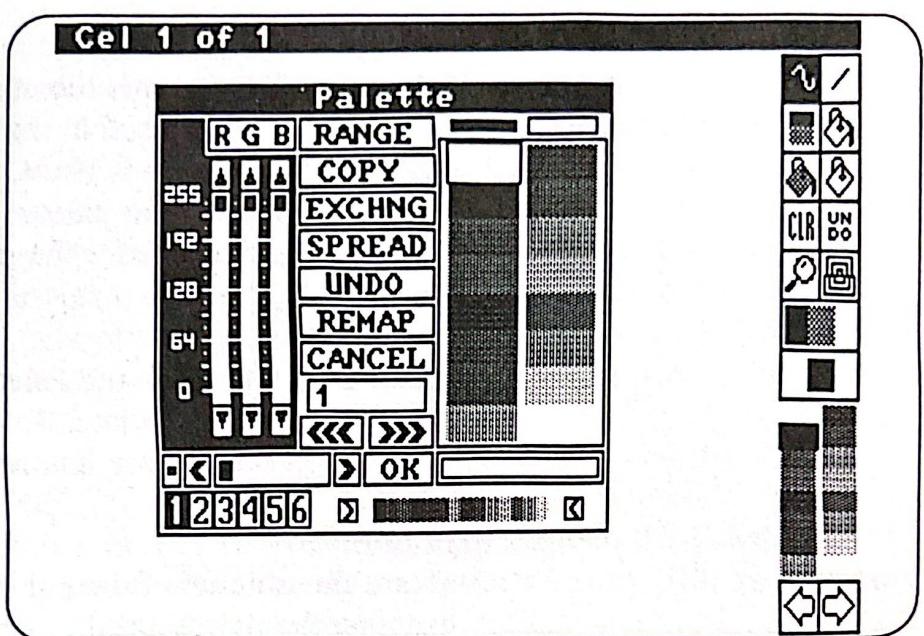


Figure 5-13. Palette Requester

### Range

The MCGA Palette requester by default will not show any ranges. Click on the Range box to open the Range.

### Copy

Select this to copy a color to another color square on the palette.

### Exchng

Select this to exchange positions of colors on the palette.

### Spread

Spread creates a spread of colors between two selected colors.

### Undo

Select Undo to undo your last action.



### **Remap**

Select Remap to redraw the current cel from the current palette. Any colors used in the current cel that were modified by commands like Copy and Exchng will be adjusted to the current palette. Remap finds the best match on the current palette for the colors used in the original cel.

### **Cancel**

Select Cancel to close the Palette requester and return the palette to its original state. Any changes made to the palette since it was opened are ignored.

### **Frame**

This is the number of the palette being used. This lets you examine the palette used on another cel without having to advance to that cel. This is useful if you would like to match certain colors from one cel to colors used in another cel.

<<<: Use palette from previous cel.

>>>: Use palette from next cel.

### **Cycle Direction**

The small box located at the bottom of the Palette requester to the left of the speed slider contains a dash, a left arrow, or a right arrow, which determines the direction of the color cycle. Move the mouse pointer to this box and click the left mouse button to change the symbol in the box. The left arrow cycles the colors in the range from right to left, the right arrow cycles from left to right, and the dash disables the color cycling feature. (This option only affects Color Cycling.)



### Speed Slider

This is like a small slide rule that lets you set the speed of the color cycling. The speed slider is located at the bottom of the Palette requester. Move the mouse pointer to the speed slider. Drag the slider to the right to cycle the range colors faster, or to the left to cycle slower. You can also adjust the speed by clicking on the arrows to the left and right of the speed slider. Hold the left mouse button down on the slider to display the cycle speed on your monitor. (This option only affects Color Cycling.)

### OK

Click on OK to save all changes made to the Palette requester and close the requester window. This returns you to the Ink & Paint screen.

### RGB/HSV

These sliders let you modify the colors. Click on the RGB or HSV box to switch between these options.

CGA users do not have the above Palette requester options, but instead have two color palettes to choose from: black, cyan, purple and white or black, green, red and yellow.

MCGA users: When you open the Palette requester, only half of the palette appears. To see the other half, click on the box next to OK at the bottom of the requester. To view the entire palette, click on the sizing arrow at the bottom right corner of the requester; click on it again to return to a half palette.

## Modifying Colors

You can change and modify colors using the R, G, B sliders and H, S, V sliders (the vertical bars on the left side of the color requester).





Click on the color box you want to change. Click the arrows located at the top and bottom of the R (red), G (green), and B (blue) sliders to change the color of the selected box, or click and hold the left mouse button on the slider inside the vertical bar and drag the slider up and down.

H (hue), S (saturation) and V (value) affect how the color appears. To change these options, first select the color you want to change. Then click on the RGB box to change the sliders to HSV. Click the arrows at the top and bottom of the sliders or click and hold the left mouse button on the slider inside the vertical bar and drag the slider up and down.

## Moving Colors in the Palette

The Copy and Exchng boxes let you move colors in the palette. To copy a color to another location on the palette, select the color you want to copy by clicking on it. Then click on Copy, and click on the second color. The first color is copied to the location of the second color.

Select Exchng to exchange the position of two colors on the palette. Click on the first color, click on Exchng, and then click on the second color. The two colors swap places on the palette.

Use the rectangle above a color column to make changes to the entire column (MCGA users will see a square). For example, to swap all the colors in the first column with all the colors in the second column, click on the rectangle above the first color column (the rectangle turns black when selected). Next, click on Exchng. Finally, click on the rectangle above the second column; the two columns of color will exchange places.

## Creating Color Spreads

Note: The colors in the cel are based on their position in the palette, so if you swap two colors on the palette, the colors will be swapped on your drawing as well.

The Spread function lets you select two colors on the palette and create a spread of colors in between the selected colors. To create a spread, click on the first color, click on Spread, and then click on the second color. Depending on the space between the two colors, Spread creates a number of color gradations from the first to the second color.

## Remapping Colors

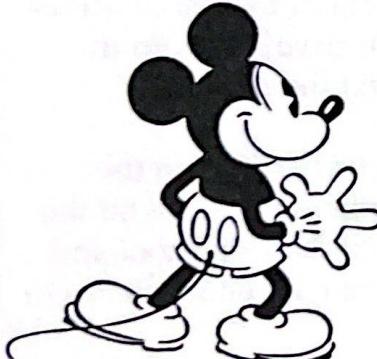
Select Remap to redraw the current cel from the current palette. Any colors used in the current cel that were modified by commands like Copy and Exchng will be adjusted to the current palette. Remap finds the best match on the current palette for the colors used in the original cel.

## Color Cycling

Color cycling is an effect that creates the illusion of movement or change by rapidly changing the colors of a still image. (Color cycling is unavailable for CGA users.)

Color cycling is not a required element in an animation. You can create in depth animations without ever incorporating the color cycling feature. However, if you learn how to properly use color cycling, you'll find that it gives you the ability to add a new dimension to your animations.

Let's say you want to draw the sun on a single cel and make it appear to radiate. Here's what you would do:



(Note for VGA users: You first need to create the series of colors to use. Select Palette from the Camera menu. Click on red (right column, top color), click on the Exchng option and click on light blue (left column, sixth color) to exchange their places. Click on the Spread option and then click on yellow (left column, third color). Click on OK to close the Palette requester. You now have the colors you will use.)

1. Select yellow from the color palette below the Toolbox.
2. Select the Freehand Line tool (top left corner of Toolbox) and then draw a circle in the center of the cel. Because you're drawing a circle freehand (and not with a Circle tool) your circle will probably not come out perfectly round — that's okay since this is only an exercise.
3. Click on the Fill On Color tool and click inside the circle to fill it with yellow. You should now have a solid yellow circle in the center of the cel. If the entire screen fills with yellow, select Undo. You have a leak in the drawing; fix the leak and then refill the drawing.
4. Click on the next shade below yellow. Click on the Freehand Line tool and draw another circle around the yellow circle. Then click on the Fill On Color tool and click in this next circle (but outside the yellow circle) to fill it.
5. Click on the next darker shade (two squares below yellow) and then click on the Freehand Line tool. Draw a third circle around the other two circles. Click the Fill On Color tool and fill this circle.

6. Click on the next darker shade (three squares below yellow) and then click on the Freehand Line tool. Draw the fourth and final circle around the three circles. Click the Fill On Color tool and fill in this circle.
7. You should now have a series of concentric circles that looks like the one in Figure 5-14.

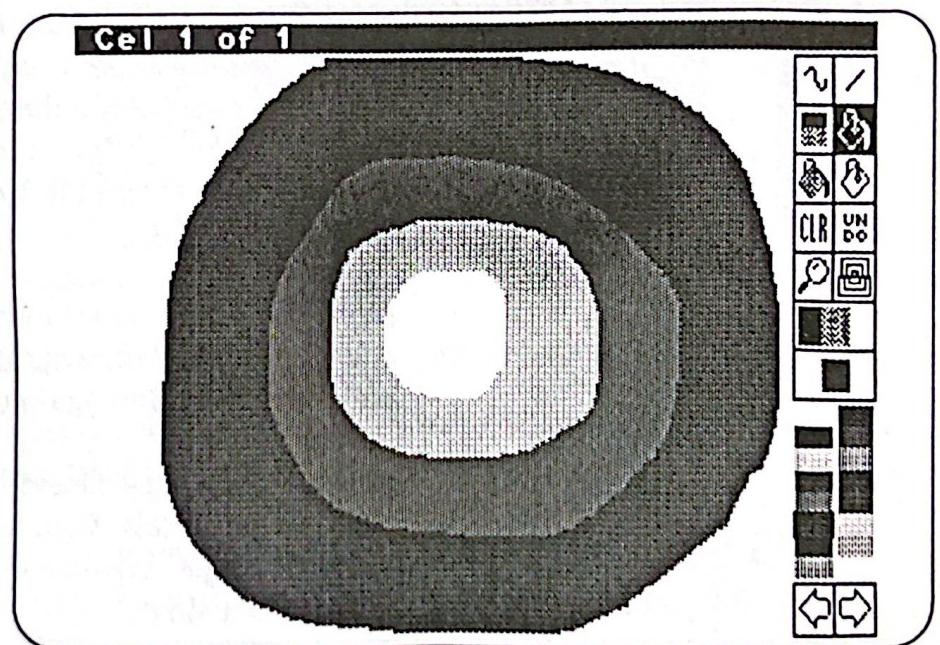


Figure 5-14. Color Cycling Example of Radiating Sun



8. Now that you've created the drawing, you need to set the range for color cycling. Select Palette from the Camera menu. (MCGA users: Click on the Range option to open the range box.) Slide the > range arrow to the right until it's immediately left of the yellow square; then slide the < range arrow until only four colors appear between the > and < range arrows (these are the four colors you used in your drawing). Click on the Cycle Direction box once so the right arrow appears. Finally, press and hold the left mouse button down on the speed slider. Drag the speed slider slightly to the right; the colors between the > and < range arrows should slowly cycle. Click on OK to close the Palette requester.
9. Press Tab to turn color cycling on. The color cycling effect causes the drawing of the sun to appear as if it's radiating. Press Tab again to turn color cycling off.

Color cycling gives the illusion of movement without requiring multiple cels. With the proper use of colors and color cycling ranges, you can create the illusion of movement on a single cel.

If you have an animation of more than one cel that uses color cycling, be sure to press the Tab key to turn color cycling on. Then press the a key or select Animate to run your Ink & Paint animation with the color cycling option turned on.

## Creating Ranges

You can create up to six different ranges of colors to create the effect of color cycling. In the above example of the sun, we described how you would color cycle one item. Having six ranges lets you color cycle through up to six different ranges of colors at once.

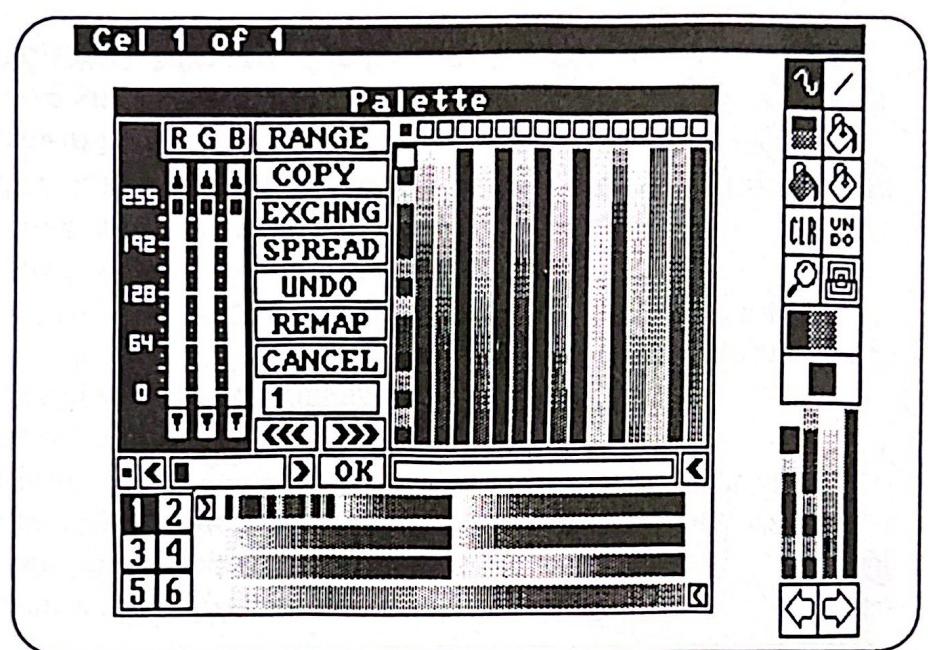


Figure 5-15. MCGA Palette Requester with Ranges Displayed

VGA, EGA, and Tandy users: The Palette requester displays one range at a time in the bottom right corner.

MCGA users: The MCGA Palette requester by default will not show any ranges. Click on the Range box to open the Range.

You can modify a range using Palette requester options such as Copy, Spread, Exchange, and the slider bars. To select a range:

1. Click on a color in the range (row of colors in lower right corner of Palette requester box).
2. Select a range number; 1 is the default range number.



3. Modify the range as desired. Use the arrows to the left and right of the colors to change the size of the range. Click on one of the arrows and hold the mouse button down while sliding the arrow left or right. Notice that when you slide the arrow back out again, the colors that disappeared when you changed the length of the range reappear.
4. The small box to the left of the speed slider sets the direction of the cycle for the current range. Click on the box using the left mouse button. A left arrow cycles the colors from right to left, a right arrow cycles the colors from left to right, and a dash turns the color cycling off for that range. Select a direction for color cycling.
5. The speed slider (located below the RGB or HSV columns) lets you control the speed of the color cycling for each range. Move the mouse pointer to the speed slider and drag the slider to the right to cycle the colors faster, or to the left to cycle slower. Click and hold the left mouse button down on the speed slider to check the speed of the color cycling on your monitor. The arrows to the right and left of the speed slider also adjust the speed. Click on the arrow using the left mouse button.
6. Set the length of the range to include only those colors you want to cycle. Slide the arrows on either side of the colors to size the range.
7. Once you establish the range, cycle direction and speed, click on OK. The Palette requester closes and saves the changes made to the requester.

- 
8. Repeat the above steps for each cel.
  9. When you're ready to animate, press Tab to enable color cycling. Then select Animate from the Ink & Paint Project menu or press the a key to animate.

Once you've painted the animation and you're ready to include a background, you can use the Camera functions to complete your animation.

Note: Color cycling is a function of the palette for each cel. To make color cycling useful in an animation, try to use the same palette in a sequence of cels.



## CHAPTER 6

# Putting It All Together

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## Putting It All Together

Now that you're familiar with the different types of animation and the capabilities of The Animation Studio, it's time to put all the techniques and information together and create your own animation from start to finish. This chapter helps you tie together the actual techniques used in animation with the tools of The Animation Studio and your imagination. The rest is up to you. Be creative, and don't be afraid to try new ideas or techniques.

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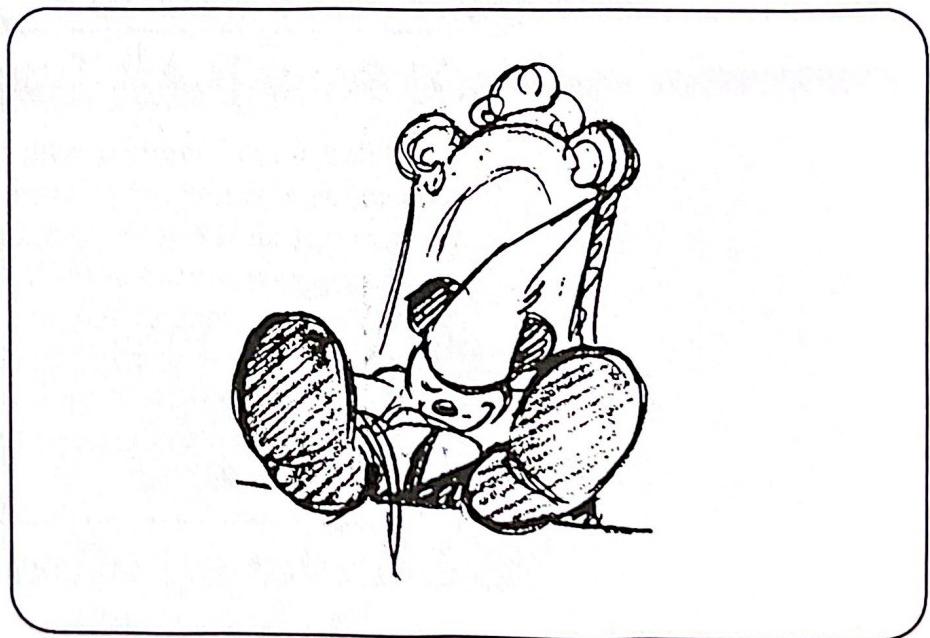
## Generating Ideas

The first step is to come up with a story idea. As mentioned in Chapter 1: The Disney History of Animation, story ideas can come from books, fairy tales, or from your own inspiration. Once you have an idea for a story, you can begin to think of the type of character or characters involved. Do you want to draw something that looks like a person, animal, creature, or object? Begin to sketch out your ideas on paper. Most artists begin with small sketches called "thumbnails," which are about 1 inch tall by 1 inch wide.



## Creating a Rough

Once you have an idea for a character, create a rough drawing of the character on paper. As mentioned earlier in this manual, a rough drawing is a loose, freehand pencil sketch that helps you decide what the character looks like.



*Figure 6-1. Rough Sketch*

A rough sketch is not a perfect drawing of the character. A rough allows you to work out the details of the character's shape and appearance. When you feel like you've created a good rough of your character, go back over the drawing with slightly darker lines to create the final sketch. Clean up the drawing by erasing lines or by darkening the outlines that are needed to create the character. Once you get accustomed to drawing with a mouse, thumbnails and roughs can be created in the Pencil Test program.

## Creating a Pencil Test

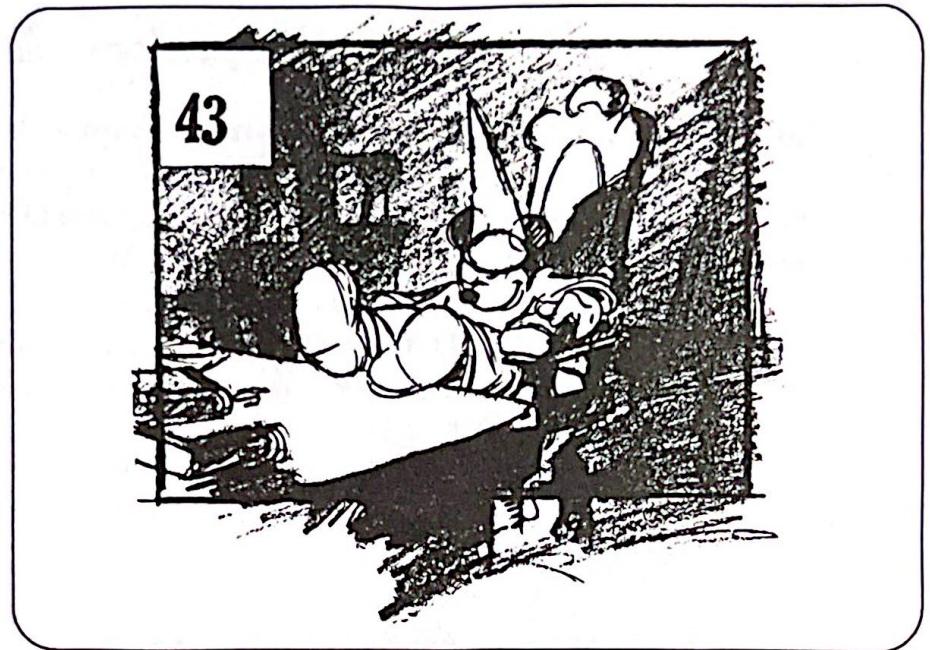
When you're ready to draw the character, open the Pencil Test section. Use the mouse and drawing tools provided in the Toolbox on the right side of the screen to draw your character.

Don't be afraid to make mistakes. Use the Undo to fix mistakes, the CLR tool to clear a cel, or use the New option to start the animation over again. One of the many features of The Animation Studio is the ability to erase part or all of a drawing, or clear the cels to start the animation over again.

As described in the Pencil Test chapter, you can select the bottom half of the Rectangle tool, and by using the right mouse button, draw an "invisible" white box that you can use as an eraser. (The white box seems to be invisible when used on a white background.) Another way to erase part of a drawing is to select part of the drawing as a brush. Hold the right mouse button so the selected image is white, and then drag the brush on the screen as if it were an eraser. For more information on erasing and brush techniques, refer to the Pencil Test chapter.

Before animating your character, you may want to give more detailed thought to the action, background, and staging of your animation. Begin with thumbnails and roughs. Sketch your character with the background and objects involved.





*Figure 6-2. Character with Background Sketch*

You may want to create your own storyboard for your animation to help you see the story on paper. This helps you keep track of the action and objects in the background, and visualize the steps necessary to create an interesting and professional looking animation.

You can create backgrounds in the Ink & Paint section of The Animation Studio, or you can create them in another paint package and add the background to your animation in the Ink & Paint section. It's important to keep in mind the layout when you begin to animate the character. For more information on creating and adding backgrounds, refer to the Camera section in Chapter 5: Ink & Paint.

## Animating Your Character

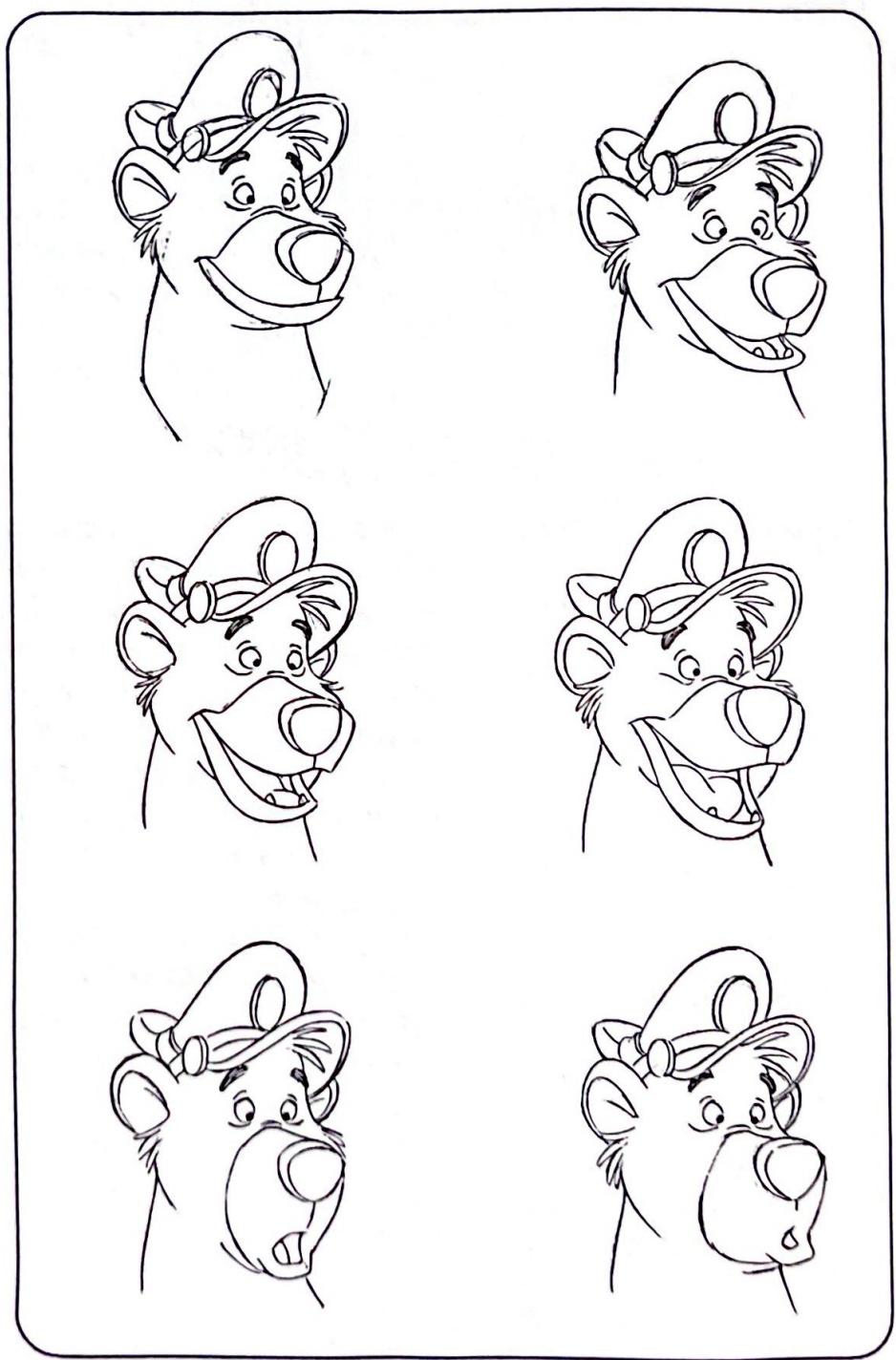
The process of creating smooth, fluid animations involves the creation of beginning, ending, and in-between poses. It is the in-between poses that create flowing, believable movement. When animating your character, don't be afraid to create a large number of cels, if that's what the animation needs to make the movement look smooth. It's not uncommon to have a short animation that's made up of 20 to 40 cels.

### Types of Movement

There are two basic animation styles: limited animation and full animation. The difference between the two is the treatment of movement. In limited animation, only certain parts of a character may move during a sequence. For example, a character's mouth will move during a talking sequence while the rest of the body remains still, or just the arms and legs will move during a walking sequence, with the head and body copied and repeated. Many Saturday morning cartoons use limited animation.

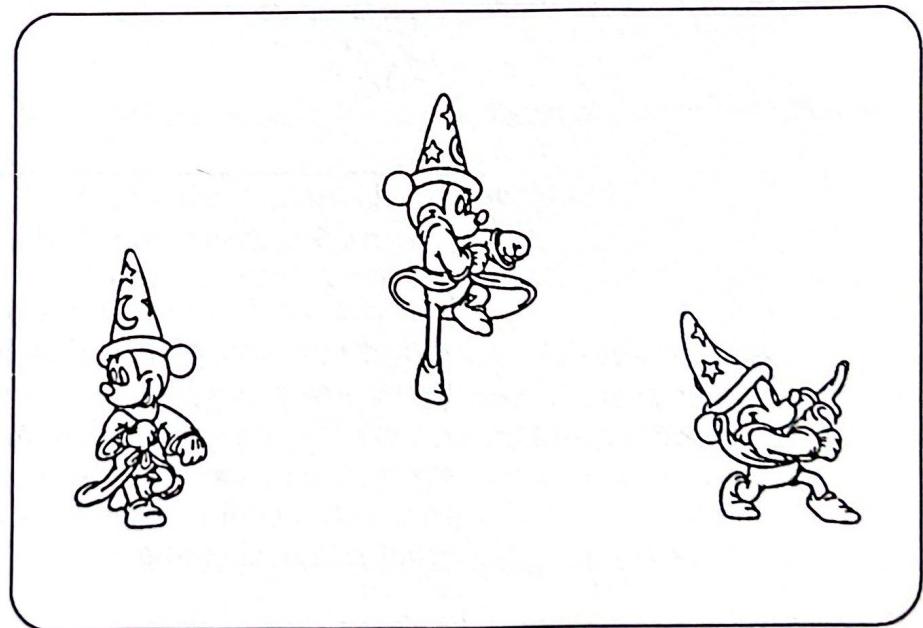
If this is the type of animation you'd like to try, the following Mouth Chart, which shows different mouth expressions, can give you ideas for your animation.





*Figure 6-3. Mouth Chart*

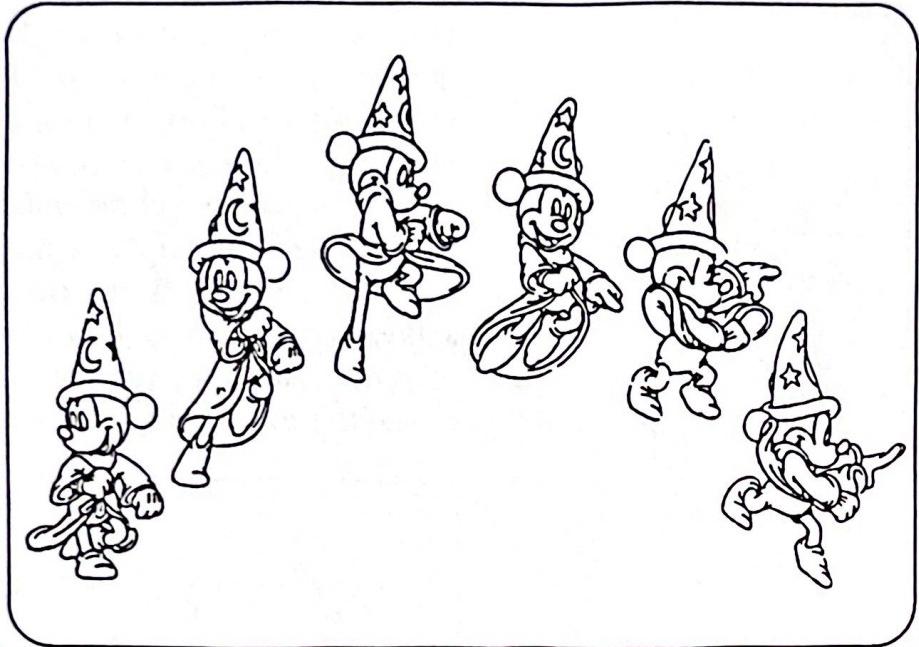
Full (or Disney-style) animation is known for its fluid, lifelike movement. This type of animation studies real movements and principles found in nature. Disney animators study actors, actresses, animals, and objects to create believable and beautiful animations. This technique involves first creating a beginning and an ending pose, or what is referred to as the two extremes of an action. The action may require only one drawing in between the two extremes, or it may require many more. The best step is to create the middle drawing next.



*Figure 6-4. Extremes*

In-between poses are then added in between the beginning and middle extremes, and the middle and ending extremes. In-betweens continue to break the action down into a series of drawings that carry the action of a character through smoothly.





*Figure 6-5. Beginning, Ending, and In-Between Drawings*

You can use the same technique in The Animation Studio. At first you may want to sketch out the different poses on paper. Once you feel more comfortable with this animation technique, you can use The Animation Studio to create every step of the Pencil Test animation process. There are two methods of creating your animation in The Animation Studio. You can either:

- *Produce the sequence cel by cel*
- *Use the Swap or j-screen technique*

To produce your animation cel by cel:

1. Create the beginning extreme on cel 1. You may want to start with the character drawing you just created on paper.

2. Create the next cel by pressing the right arrow key on your keyboard, or by clicking on the Forward Arrow tool in the Toolbox.
3. Notice the onion skin effect when you advance cels. You can redraw the character using tools from the Toolbox, or you can move back to the previous cel, copy the drawing as a brush, and stamp it on the next cel.
4. Continue to add cels, copying, pasting, erasing, and modifying them as needed to create movement.

To create animations using the Swap or j-screen technique:

1. Create the beginning extreme on cel 1.
2. Create the ending extreme on cel 2.
3. Advance to cel 3. Notice that you see both the beginning and ending extreme at the same time, which lets you correctly place the middle or “intermediate” drawing.
4. Create the intermediate drawing on cel 3.
5. Press the j key on your keyboard. This swaps the image on cel 3 with the Swap screen (the screen in memory). You can use the Swap screen, also referred to as the j-screen, like a scratch pad. You can create the drawing you need without affecting the existing animation, and insert the scratch pad material where you need it.



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6. Using the left arrow key or Back Arrow tool, move back to cel 2. Press the j key. The middle drawing created on cel 3 is now on cel 2. The drawing that was on cel 2 is now in the j-screen.
  7. Move to cel 3 and press the j key again. The drawing that was originally on cel 2 is now on cel 3. The series is now in the correct order.

If you just need to copy the current cel onto the next cel, simply press the Enter key. Continue to use the Swap screen as a scratch pad to swap drawings and create the in-between drawings needed.

You should frequently test your animation by selecting the Projector tool from the Toolbox, or by pressing the a key. By doing so, you can check the movement of the character and decide if you need to add or rearrange cels, or adjust the drawing. Using the Projector tool to test your animation will not affect your drawings.

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## Basic Animation Techniques

Disney-style animation follows basic techniques and methods found in the animation industry and in nature. This section describes and gives examples of those basic techniques for you to use in creating interesting and professional-looking animations. The Animation Studio provides animated examples of some of the techniques described below. There are two different types of animated examples provided: Reference animations and Example animations.

The Reference animations are actual Disney animations of popular characters. Reference animations are located on the MORGUE disk. Since these Disney characters are protected by law, these computer files cannot be altered. The Animation Studio provides the Reference animations as instructional examples.

The Example animations are provided for you to study as well as use in your animation, and are located on the EXTRAS disk in the Library subdirectory.

To access the Reference animations, perform the following steps. Remember that you won't be able to save any modifications you make to the Reference animations.

1. Load the Pencil Test program.
2. Select Open >> CFast from the Project menu.
3. The Load requester appears. Hard disk users: The Reference animations are located in the C:\DAS\MORGUE subdirectory. Floppy disk users: The Reference animations are on the MORGUE disk.
4. Double-click on the file name of the animation you want to open.
5. Press the a key or select Animate from the Project menu to run the animation. Many of the Reference animations can run by their Exposure Sheets. To do this, press Shift-a to continue. Press either mouse button to stop the animation.



To access the Example animations:

1. Load the Pencil Test program.
2. Select Open >> CFast from the Project menu.
3. The Load requester appears. Hard disk users: The Library animations are located in the C:\DAS\LIBRARY subdirectory. Floppy disk users: The Reference animations are on the EXTRAS disk.
4. Double-click on the file name of the animation you want to open.
5. Press the a key or select Animate from the Project menu to run the animation.
6. Press either mouse button to stop the animation.

After you run an animation, it's a good idea to single-step through the animation so you can see each cel of the animation (press the F3 key to turn on Loop Lock before single-stepping through the animation; this way you won't add blank cels when you get to the end of the animation). This is an excellent way to study each of the techniques so you can use similar techniques in your own creations.

NOTE: When loading Reference animations, you may get the message "The cel sizes don't match the current editor configuration" and you're given the option to Reconfigure or Cancel. The animation needs to be run in VGA 640x480. Select Reconfigure if you still want to view the animation or Cancel to cancel loading.

## In-betweening

As mentioned earlier, in-betweening is the process of creating the drawings between extremes. These drawings carry the action of a character through smoothly. A smooth animation may require a single in-between, or it could require numerous in-betweens. The best method for creating the in-betweens is to create the middle drawing first, and continue to split the action in half.

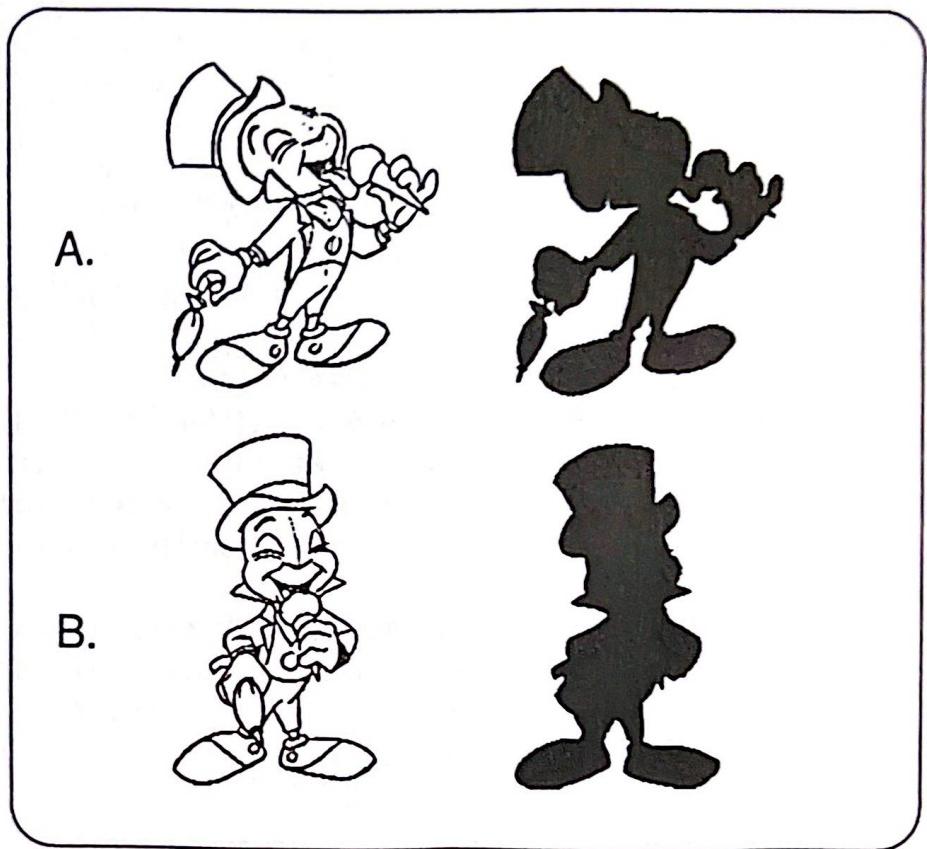
## Silhouette Test

There is a long standing rule in animation that states a good extreme pose should "read" in silhouette. This means that you should be able to "black in" the pose and still be able to clearly see the action of the character.

The reason for this rule is that on the motion picture screen, you do not have an opportunity to study the pose as you do in many other types of artwork. The impression of each key pose must be as clear and unmistakable as possible.

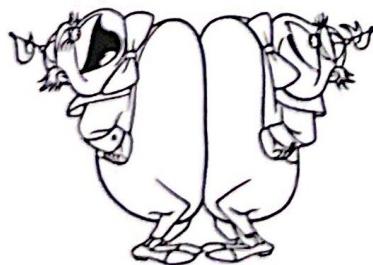
For example, in illustration A, it is fairly clear that Jiminy Cricket is eating an ice cream cone, even though the pose is blackened in. In illustration B, Jiminy's action isn't as clear. Try blackening in your character's extreme pose and see if other people can tell what the character is doing.





*Figure 6-6. Silhouette Test Example*

## Squash and Stretch



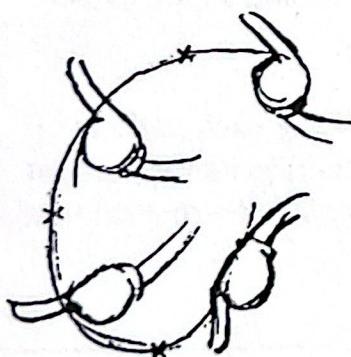
Squash and Stretch is contracting and expanding movement within a shape as it moves through an action. The squashing and stretching shows elasticity and volume; without it, characters would seem stiff and mechanical. These shape changes are usually exaggerated by the animator, but it's a good practice to maintain the volume of the character throughout the movements.

Reference animation: TWEEDLE.CFT  
Example animation: SQUASH.CFT

Notice in the Reference animation how the volume of Tweedle-dee and Tweedle-dum remains the same throughout the series of movements. Notice how the facial expressions, mouth movements, and exaggerated squashing and stretching add humor to this animation.

In the Example animation, notice how the ball changes shape as it approaches the bottom of the screen, and how it flattens as it hits the “ground.” These techniques make the bouncing ball seem natural.

## Arcs



Arcs are the plotting of the slightly circular path followed by most living creatures' movements. In an animation, they create pleasing designs in a two dimensional path of action, and give fluidity to the movements. Arcs usually refer to the action of an arm or hand.

Reference animation: GODMOM.CFT

Example animation: ARC.CFT

Notice the Fairy Godmother's flowing sleeves and the arc of the wand and her arm as she moves to the right.

## Path of Action

Path of Action refers to the movement of a character through a staged background.

Reference animation: GOOFY.CFT

Example animation: PATH.CFT

The angle used in the Goofy animation adds to the action and appeal of this animation. Goofy starts out very small on the screen and increases in size as he approaches the ski ramp.



## Anticipation



Anticipation refers to the specific movement preceding a major action which leads the eye through the sequence of motions clearly. It is the idea that, "before you go one way, you must go the other way first." This principle is evident in almost every action.

Reference animation: DONALD.CFT

Example animation: ANTCPION.CFT

In the Reference animation, Donald sees something that makes him mad. Before he can jump up from the table, he moves downward, almost as if he is trying to gain momentum for the giant leap he's about to make. Notice also the squashing and stretching of Donald's face as he reacts.

In the Example animation, watch how the sack gathers itself in a downward motion before making its triumphant leap. Single step through the sequence of cels to study the squashing and stretching of the sack.

## Advanced Animation Techniques

Once you've accomplished some of the basics of animation, you'll probably want to try more advanced animation techniques. The techniques presented in this section require a solid understanding of movement, the creation of in-betweens, and some patience.

There are two animations provided to illustrate each technique. The first file name listed is the Disney Reference animation, which is copy protected. The second file name listed is the Example version of the technique that you may use in your own animations. The Reference animations are on the MORGUE disk and the Example animations are on the EXTRAS disk in the Library directory.

## Biped Walk

Reference animation: MICKEY.CFT  
Example animation: 2LEGWALK.CFT

Notice how Mickey's head moves back and forth as he walks along, and how the feather in his cap responds to that movement. His hands and clothes also move, which adds to the believability of this character in motion.

## Quadruped Walk

Reference animation: PLUTO.CFT  
Example animation: 4LEGWALK.CFT

Pluto's ears flop and his tail subtly wags as he walks. Notice how Pluto practically stays in the same place on screen yet he appears to be pushing an invisible background with his paws. This animation would work well with a background that changes as he walks, which would enhance the illusion of walking.

## Biped Run

Reference animation: ALICE.CFT  
Example animation: 2LEGRUN.CFT

As Alice runs, watch the flow of her dress and apron and the movement of her arms. These effects help make her run look natural and believable.



## Quadruped Run

Reference animation: LADY.CFT

Example animation: 4LEGRUN.CFT

The changing size of the animation on screen makes you feel as if Lady is really coming toward you.

## Flying

Example animation: FLIGHT.CFT

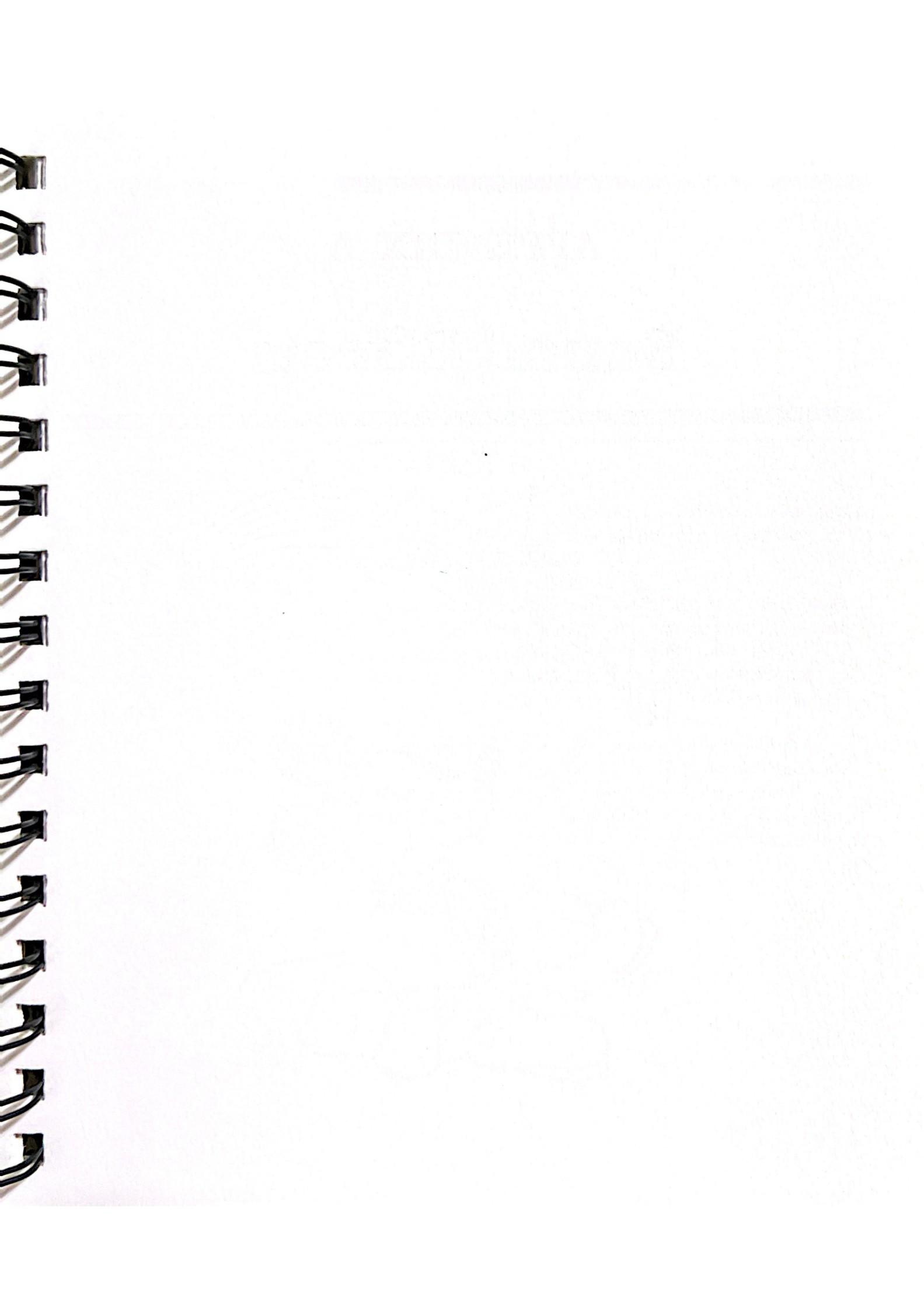
The bird's head and tail movements compliment the flapping wings and make this flight appear natural. Notice how the bird essentially stays in the same place but appears to be flying across the screen.

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## Try It

Now that you've had the opportunity to see and experiment with different animation techniques, you have the animation fundamentals that will help you create your own classics.





## APPENDIX A

# Sound Effects



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## Sound Effects

**IMPORTANT:** You will only hear sound effects if you own The Sound Source from Disney Software, a Sound Blaster card, or Tandy Digital Sound.

The Sound Source is a compact sound accessory that plugs into the parallel printer port on the back of your PC — you do not need to disassemble your computer or connect amplifiers or speakers to use it. See your local software retailer for more details on the low cost Sound Source.

The commands used to incorporate sounds are called Sound commands, and are put in the Dial, Sound, and Comments column of the Exposure Sheet. Any sound effects software package can be used if the files have been saved with the .INS file extension. (For more information on creating and saving sound files, refer to the documentation that came with that software.)



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An .INS file can be an IFF 8SVX instrument file or it can just be raw digitized sound data. In order for the program to recognize a file as a sound file, the file needs to have an .INS file extension (rename the file in DOS to include the .INS file extension if necessary). Files which aren't specifically sound data will sound like static. .INS files can be played through The Sound Source, Sound Blaster, or Tandy Digital Sound.

A .VOC file is a special sound format used only with the Sound Blaster. It works with both the !NOTE and !SFX commands.

The Animation Studio provides a directory called SOUNDfx on the EXTRAS disk that contains basic sound effects for you to use in your animation.

The Sound commands (!Commands) are direct commands to The Animation Studio that specify an action. You can use the commands to modify and manipulate sound effects.

---

## Sound Commands

Each of the !Commands has its own syntax and parameters that must be followed in order for the command to be executed properly. It is important to recognize the following conventions:

- Make sure that the ! (exclamation point) precedes each of the main command words. Any command in the Dial, Sound, and Comments column not preceded by ! will be treated as a comment and will not affect the execution of the Exposure Sheet.

- Terms in [ ] (brackets) highlight optional information that may be used in the command.
- Words between “ ” (quotation marks) are file names you need to input.
- Words that appear in upper case are command terms that you must type as they appear (the only exception is that you can type the command terms in upper or lower case).
- The command term parameters appear in lowercase italics and are place holders for input from you.

## **!Instrdir**

**!INSTRDIR** is only necessary if the instruments are not in the current directory. The full path name must be included. Use the command to tell the complete path of where the sound is located.

The following example tells the Exposure Sheet to go to the SOUNDFX subdirectory in drive A: to locate sound effect files.

Example: **!INSTRDIR "A:\SOUNDFX"**

## **!SFX**

The **!SFX** command lets you select and play IFF instruments or digitized sound files. The sound file must have the .INS extension. (Sound Blaster owners can also play .VOC files.) Unlike the **!NOTE** command, **!SFX** can play a sound effect at any rate using the Speed command. The command format is:

**!SFX "sfx.ins" [SPEED *rate*] [LOOP *times*]**



Where:

*sfx.ins* can be the path and file name of the IFF sound effect. If this parameter is left blank, the last !SFX or !NOTE command plays.

*SPEED* sets the speed in the cycle rate "rate." A lower number gives a lower pitch and replay rate. This number may be between 4000 and 23000.

*LOOP* allows the sound to play multiple times. Input the number in place of the term "times" in the command line.

The following example uses the sound effect called BOING.INS, sets the speed to 4000, and plays the sound 5 times:

```
!SFX "BOING.INS" SPEED 4000 LOOP 5
```

## **!Note**

The Note command lets you select and play most digitized sound files or IFF instrument files (Sound Blaster owners can also play .VOC files.) The command format is:

```
!NOTE ["note"] [KEY value] [OCTAVE n]
```

Where:

*note* is the full path name of the digitized sound or IFF instrument you want to play. If you don't specify this, then the instrument defaults to the last instrument or sound added.

---

*KEY* sets the key value in which the note is to be played. The notes available are: C, C#, D, D#, E, F, F#, G, G#, A, A#, and B.

*OCTAVE* sets the octave of the instrument. Some instruments can only be played at preset octaves. Middle C is in Octave 5.

The following example plays the BOING.INS sound file in Octave 5 in the key of C:

```
!NOTE "BOING.INS" KEY C OCTAVE 5
```

## **!Stop**

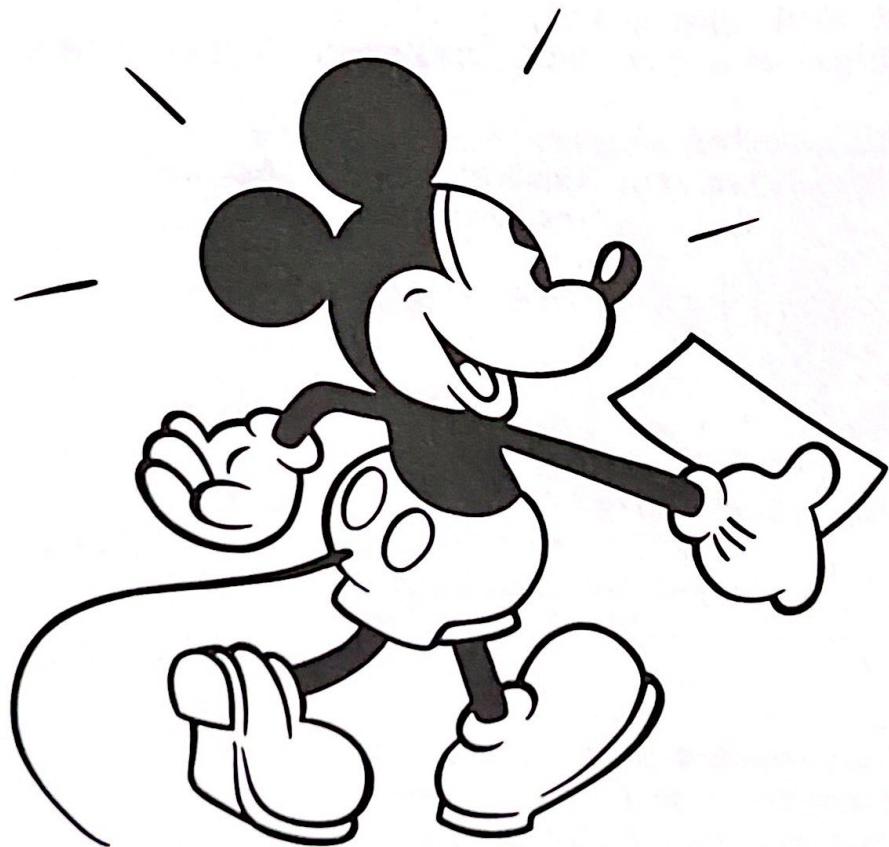
The Stop command stops the current sound effect or note. The command format is:

```
!STOP
```



## APPENDIX B

# File Operations



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## **File Operations**

This appendix provides information on file extensions and instructions on exporting files to video.

---

## **File Formats and Extensions**

The following list provides descriptions of the file extensions applicable to The Animation Studio.

<b>Extension</b>	<b>Type of File (File Format)</b>
.ANM	Anim (common Amiga animation file format)
.BBM	Brush (generated by The Animation Studio)
.CFC	CFast Ink & Paint (color)
.CFT	CFast Pencil Test (black and white)
.INS	Sound effect played through The Sound Source, Sound Blaster, or Tandy Digital Sound
.LBM	IFF (Interchange File Format; common paint file format)
.M*	Font (used by The Animation Studio and DPaint IIe)
.SEC	Secured CFast Ink & Paint (color)



<b>Extension</b>	<b>Type of File (File Format)</b>
.VOC	Sound effect played only through the Sound Blaster
.XPO	Exposure Sheet (generated by The Animation Studio)

We recommend that you name your files with these extensions so you can easily recognize the file type. This is useful when loading or opening files.

CFast is a proprietary file format specific to The Animation Studio. It saves the Exposure Sheet file as part of the animation file. CFast tends to create larger disk files; when saving large animations with limited disk space, use the Anim file format.

Anim is a widely used format in the Amiga animation world. Animations saved as Anim files can be shown in other animation programs, and The Animation Studio can play Anim files from other animation programs. If an animation is saved from the Exposure Sheet (with the Save By Sheet command), the Anim file format can save the timing (the order of the cels in the Exposure Sheet) of the animation, but cannot save the Exposure Sheet itself as part of the file; consequently, color animations saved as Anim files cannot play sound.

IFF is a different file format from the Anim and CFast formats in that it saves each cel of the animation as a separate file. All of the saved cels are placed in one subdirectory. This is a universal format, since it can make use of single cels from many different paint packages.

## Converting File Formats

The Animation Studio comes with a program that lets you convert file formats. You can convert a .LBM file into a .GIF, .TIF, or .PCX file, or you can convert a .GIF, .TIF or .PCX file into a .LBM file. The program called CONVERT converts the files. Here is the proper syntax:

`CONVERT [option] [path name\file name] [optional output path name\optional output file name]`

Where:

*Option* is a hyphen followed by a single letter that represents the type of file you want to generate. The options you can choose from are:

- i            Generate an IFF file (IFF files have an .LBM extension)
- g            Generate a .GIF file
- p            Generate a .PCX file
- t            Generate a .TIF file

*Path name* is the subdirectory where the file you want converted is located.

*File name* is the name of the file you want converted.

*Optional output path name* is the path where you want the generated file to go.

*Optional output file name* is the name you want the generated file to have.



## **Examples of File Conversion**

**CONVERT -i POUND\DOG.GIF**

This tells the program that you want to convert the .GIF file called DOG.GIF into an IFF file, and that the file is located in the POUND subdirectory. When you don't signify an output path or output file name, the program will take the original file name , add the correct new extension (in this example it becomes DOG.LBM), and place it in the root directory.

**CONVERT -i POUND\DOG.GIF POUND\CAT**

This tells the program that you want to convert the GIF file called DOG.GIF into an IFF file, and that the file is located in the POUND subdirectory. The program will rename the file DOG.GIF to CAT.LBM (the correct extension is automatically added) and place it in the POUND subdirectory.

**CONVERT -p POUND\CAT.LBM ZOO**

This tells the program that you want to convert the LBM file called CAT.LBM into a .PCX file, and that the original file is located in the POUND subdirectory. The program will place the new file in the ZOO subdirectory. Since you do not specify an output file name, the program uses the original name of CAT and adds the correct new .PCX file extension (CAT.PCX).

---

```
CONVERT -p POUND\CAT.LBM ZOO\TIGER
```

This tells the program that you want to convert the LBM file called CAT.LBM into a .PCX file, and that the original file is located in the POUND subdirectory. The program will place the new file in the ZOO subdirectory. The file will be renamed TIGER with the correct new .PCX file extension (TIGER.PCX).

Because of the versatility of these file formats, there is a chance that a software application may not be able to read a file converted by the conversion program.

## Files to Video

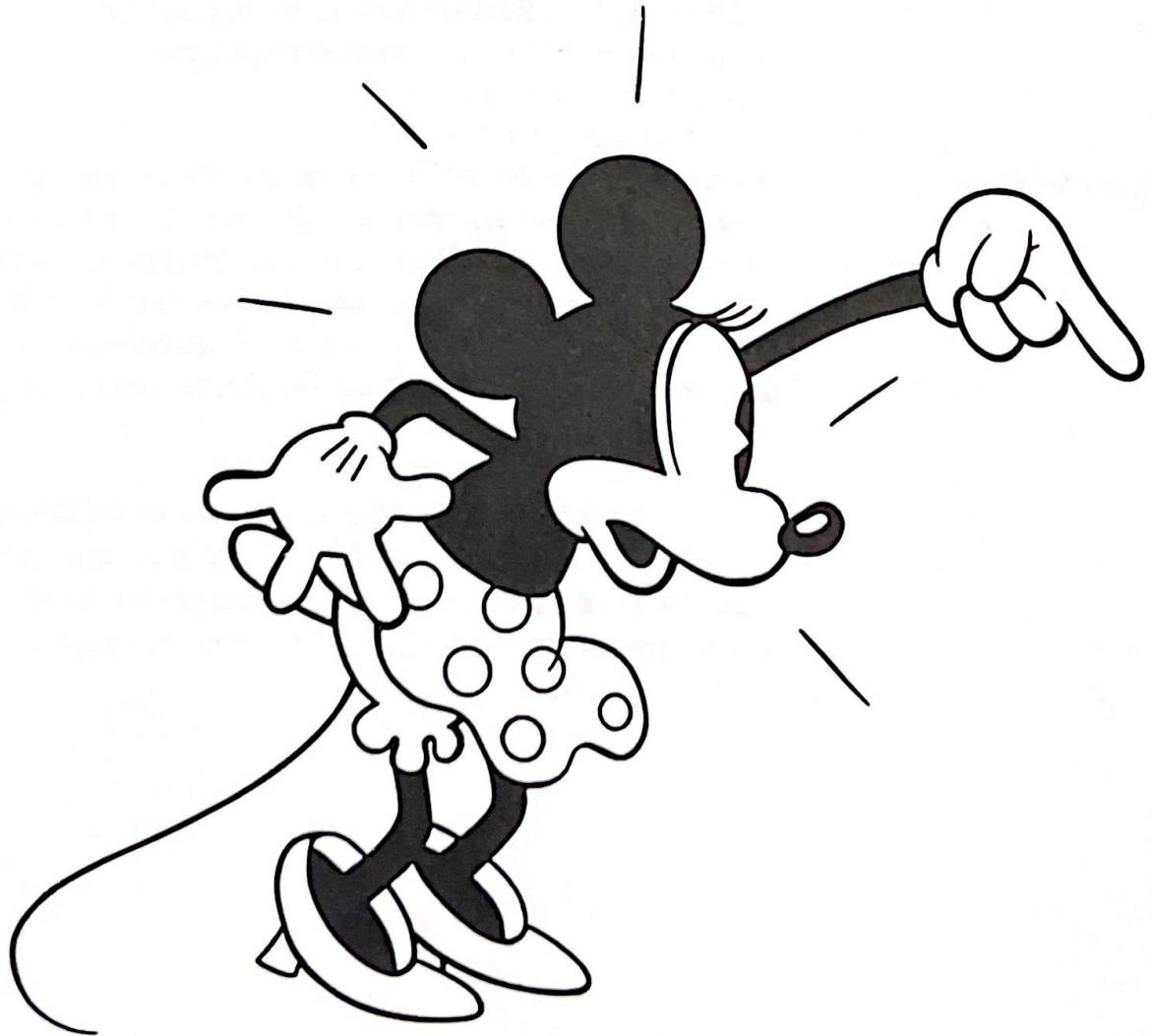
Animations created in The Animation Studio can be output to a VCR and viewed on your television. It isn't necessary to create one large animation in The Animation Studio at one time if you plan to output the animation to video. You could save memory by creating small sections of the animation and outputting each section to video, using the video as the storage medium.

You will need to purchase a special VGA or MCGA card with an NTSC output to be able to output an animation to VCR. See your computer hardware retailer for more information on cards that allow this type of output.



## APPENDIX C

# Keyboard Commands



Keys that are hyphenated must be pressed simultaneously.

Items with an asterisk (\*) next to them are keyboard commands not listed on the menu in the program.

## Pencil Test

Function	Key	Function	Key
<b>Project Menu</b>			
New	Shift-n	Clear	Shift-k
Open >> CFast	o	Go to	g
Save	Shift-s		
Save As >> CFast	w		
Exposure Sheet	F6	<b>Brush Menu</b>	
Animate	a	Rotate >> 45 degrees	Shift-4 or \$
*Animate using Exposure Sheet	Shift-a	90 degrees	Shift-9 or (
About	Shift-/ or ?	Resize >> Halve	h
Ink & Paint	F5	Double	Shift-h
Quit	Esc	Wider	Shift-x
		Taller	Shift-y
		Size	Shift-z
<b>Edit Menu</b>		Flip >>	Horizontal x Vertical y
Undo	u	Font >>	Load Shift-t
Restore	Shift-u		
Swap	j		
Invert	Shift-` or ~	<b>Tools Menu</b>	
Clean up	F7	Freehand line	d
Insert	i	Dotted line	s
Delete	Del	Line	v
Copy	Shift-o	Curve	q
Paste	Shift-p	Outline circle	c



<b>Function</b>	<b>Key</b>	<b>Function</b>	<b>Key</b>
Filled circle	Shift-c	Last cel	Down arrow
Outline ellipse	e	Move forward and copy cel	Enter
Filled ellipse	Shift-e	Delete current cel	Del
Outline rectangle	r	Display main/expanded memory	F1
Filled rectangle	Shift-r	Toggle onion skin effect	F2
Text	t	Toggle loop lock	F3
Fill on color	f	Set jump-to cel	F4
Brush	b	Enter Ink & Paint	F5
*Reselect last brush	Shift-b	Enter Exposure Sheet	F6
*Magnify	m	Clean up cel	F7
*Zoom in	Shift-, or >	Toggle mouse pointer	F8
*Zoom out	Shift-. or <	Toggle menu bar	F9
		Toggle menu bar and Toolbox	F10
		*Quit program	Esc
		*Delete all text in an edit field	Ctrl-x
<b>Preferences Menu</b>			
Frame rate	Shift-f		
Fade Colors >> Invert	Shift-1 or !		
Fade In	]		
Fade Out	[		
Coordinates	Shift-\ or   (vertical bar)		
Toolbox	F10		
<b>Help Screen</b>			
*Open Help screen	Alt-h		
Previous cel	Left arrow		
Next cel	Right arrow		
First cel	Up arrow		

## Exposure Sheet

Function	Key
<b>Project Menu</b>	
New	Alt-n
Open	Alt-o
Save As	Alt-w
Animate	Alt-a
Pencil Test	F6
<b>Edit Menu</b>	
Copy	Alt-c
Cut	Alt-x
Paste	Alt-i
Sparse	Alt-f
Search	Alt-s
Search again	Alt-g
Block	Alt-b
First/Last Frame	Alt-t
<b>Help Screen</b>	
*Open Help screen	Alt-h
Beginning of Line	Home
End of line	End
Back one page	PgUp
Forward one page	PgDn
*Delete all text in an edit field	Ctrl-x

## Ink & Paint

Function	Key
<b>Project Menu</b>	
New	Shift-n
Open >> CFast	o
Save	Shift-s
Save As >> CFast	w
Animate	a
Pencil Test	F5
About	Shift-/ or ?
Quit	Esc
<b>Edit Menu</b>	
Undo	u
Restore	Shift-u
Clear	Shift-k
Go to	g
<b>Camera Menu</b>	
Frisket	Shift-` or ~
In Use	,
Palette	p

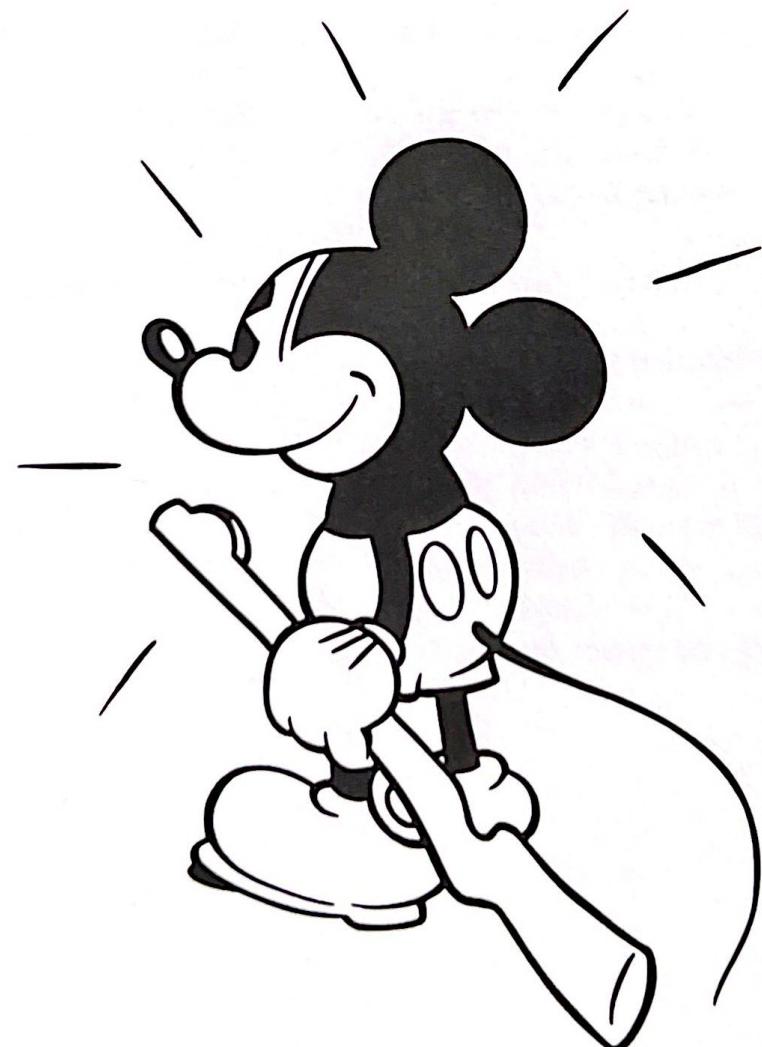


<b>Function</b>	<b>Key</b>	<b>Function</b>	<b>Key</b>
<b>Tools Menu</b>		<b>Help Screen</b>	
Freehand line	d	*Open Help screen	Alt-h
Line	v	Previous cel	Left arrow
Filled rectangle	r	Next cel	Right arrow
Dithered rectangle	Shift-r	First cel	Up arrow
Fill on color	f	Last cel	Down arrow
Dither fill	Shift-f	Back one color	[
*Magnify	m	Forward one color	]
*Zoom in	Shift-, or >	Previous MCGA palette	Shift-[ or {
*Zoom out	Shift- or <	Next MCGA palette	Shift-] or }
<b>Preferences Menu</b>		Display main/expanded memory	F1
Toggle menu bar and Toolbox	— F10	Enter Pencil Test	F5
		Toggle mouse pointer	F8
		Toggle menu bar	F9
		Toggle menu bar and Toolbox	— F10
		Toggle color cycling	Tab
		Quit program	Esc
		*Delete all text in an edit field	— Ctrl-x



## APPENDIX D

# Troubleshooting



**Problem:**  
**The program  
doesn't load  
properly.**

If you encounter any problems with The Animation Studio, check the following items before calling Disney Software Customer Services.

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## Troubleshooting

- Do you have the correct equipment as listed under Chapter 2: Installation in the Getting Started manual?
- Is each component of your computer system (computer, monitor, disk drives, printer) turned on?
- Did you insert the disk correctly into the drive, with the label side up? Did the disk go smoothly into the drives? Did you close the drive door?
- Did you follow the copying and loading instructions correctly?
- Do you have any unusual peripherals hooked up to your computer? Try unhooking any unnecessary peripherals, rebooting the computer, and reloading the program.
- Do you have Terminate and Stay Resident (TSR) programs in RAM? Examples of TSRs are Microsoft® Windows, calculators, clocks, and disk caches. TSRs are sometimes automatically loaded by your computer through the AUTOEXEC.BAT file or CONFIG.SYS file when you boot your machine. If you're using TSRs, you may have to start up your



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computer by loading DOS from an original DOS system disk, or you can remove the TSRs from your AUTOEXEC.BAT file. Please refer to your computer's user manual for complete details on TSRs and AUTOEXEC.BAT files.

**Problem:**  
**The sound warbles,  
breaks up or is  
missing.**

- Do you have The Sound Source from Disney, a Sound Blaster, or Tandy Digital Sound? One of these is required for sound.
- Is your Sound Blaster or Sound Source connected properly?
- If you have The Sound Source with a printer connected to it, did you try turning on the printer?
- Are you running the program through a DOS shell (like Microsoft Windows)? This may cause the sound to break up. Try quitting out of the DOS shell and running the program from the DOS prompt.
- Are you using a machine that runs slower than 8 Mhz? This may distort the sound.

**Problem:**  
**Colors do not  
appear as expected.**

- Are your monitor's contrast, color, and tint controls properly adjusted?
- Are your monitor cables securely attached?

## Questions and Answers

Here are answers to some questions you may have about The Animation Studio:

- Q.** Can you delete cels in Ink & Paint?
  - A.** No. But if you make a mistake coloring one and you're past the point of being able to use the Undo command, use the Restore command to return the cel to its original state.
  
- Q.** Can the Exposure Sheet be changed from Ink & Paint, or after you've begun painting the animation?
  - A.** No. You must complete the Exposure Sheet before going to the Ink & Paint section.
  
- Q.** I have more than 640K memory, but the program reports less than that. Why doesn't the program recognize the additional memory?
  - A.** The Animation Studio only supports LIM EMS Expanded memory, not Extended memory. To tell which type of memory your system has, you will need to consult your add-on memory manual or use a memory managing program which can convert your extra memory into expanded memory. Also, you will need to have the memory managing program installed before using The Animation Studio for the program to detect the Expanded memory.



- Q.** The program tells me that I'm running out of memory and recommends that I save the file. When I try to save the file, I can't — why?
- A.** The program does its best to warn you in advance when you're running out of memory. If you've made a large number of changes to a file, by the time the program detects that you're running out of memory, it might not have enough memory left to save all your changes (the program saves all or nothing; it cannot save part of a file). We recommend that you save your animation frequently; this way, if the program is unable to save your changes, you only lose the work you've done since your last save.
- Q.** I used the !Commands on the Exposure Sheet to incorporate sounds into my animation. Why don't I hear anything?
- A.** You will only hear sounds effects if you own The Sound Source from Disney Software, a Sound Blaster card, or Tandy Digital Sound. Also, you must use the !INSTRDIR command to access the directory that contains the .INS files unless the .INS files are in the current directory.
- Q.** Can I load other files into The Animation Studio?
- A.** Yes, as long as the program can handle the file format. The Animation Studio can read other program's .LBM and .ANM files. A conversion program is included to convert .PCX, .GIF, and .TIF files to .LBM files, and vice versa. See Appendix B: File Operations for details on file conversion.

- 
- Q.** How can I slow my animation down so it's easier for me to study?
- A.** There are several ways. One is to use the Sparse command on the Exposure Sheet. The Sparse command allows you to add blank spaces between cels, so the animation runs slower (see Chapter 4: Exposure Sheet for more details on the Sparse command). Another way to view the animation is to single-step through the animation using the right arrow key or Forward arrow tool (be sure to press the F3 key to turn on Loop Lock first; this way you won't add blank cels when you get to the end of the animation).
- Q.** Why am I getting an ellipse when I've selected the Circle tool?
- A.** Circles are drawn as Ellipses in 640x200 and 640x350 resolutions. To draw a circle in these resolutions, use the Ellipse tool.
- Q.** Why can't I save changes I've made to the Disney Reference animations on the MORGUE disk?
- A.** The Disney characters are properties owned and protected by Disney. They are protected by copyright laws and cannot be saved with modifications made to them without permission from Disney. The Example animations on the LIBRARY disk, however, can be saved with changes made to them because they are not Disney copyrighted characters.



- Q.** Are additional animations available for The Animation Studio?
- A.** Not at this time. However, a Disney Software bulletin board system will be established so callers will be able to download animations created by other users. The animations will be available for viewing. In certain cases, the creator may allow you to modify and use the animation in your own animation files.

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## Disney Software Customer Service

If you've tried all our troubleshooting suggestions and checked out the Questions and Answers section but still need information, please contact our Disney Software Customer Service department.

There are four ways to contact Customer Service: calling, writing, getting onto our Bulletin Board System, or faxing.

### Calling

You can call Disney Software Customer Service at (818) 841-3326, Monday through Friday from 8:00 a.m. to 5:00 p.m. (Pacific Time). We'll be happy to answer any questions that you have.

If you have a technical problem that you need solved, please have the following information ready before you call:

- The name of the program you're using
- The version of the program
- The type of computer you're using (specific model name helps)

## Writing

- Information on other peripherals you're using (type of monitor, video card, interface, modem, mouse, etc.)
- DOS version number
- Description of the problem you're having

We encourage you to write. It gives us a chance to answer your questions and pass along any tips we may have about your program. We also welcome any comments you might have about our product.

Walt Disney Computer Software, Inc.  
Attn: Customer Service  
500 South Buena Vista Street  
Burbank, CA 91521

If you're writing us about a problem with your program, don't forget to include all the information listed under "Calling."

## Using the Bulletin Board System

If you own a modem, you can call the Disney Software Hotline at (818) 567-4027. To use the board properly, make sure your communication parameters are set to **8,N,1** (**8** for 8 bits, **N** stands for no parity, and **1** for 1 stop bit). The Hotline supports the following modem baud rates: 300, 1200, 2400, 4800, 9600.

The Disney Software Hotline is a free 24-hour service for Disney Software customers. It provides clues, hints, tips, a question and answer feature, and other surprises. There's also a section for callers interested in seeing previews of our new releases.



## Faxing

If you have access to a fax (facsimile machine), you can fax us messages at (818) 846-0454. If you're faxing us about a problem with your program, don't forget to include all the information listed under "Calling." Be sure to address the fax to "Customer Service."

## Disk Replacement

If your disk is defective and you need to return it for a replacement, please mail us only the disk (don't mail us the packaging or other materials) with your name, return address, and the problem with the disk. Mail the disk to:

Walt Disney Computer Software  
3333 N. Pagosa Court  
Indianapolis, IN 46226

We'll replace your disk at no charge within ninety (90) days after purchase, provided you've mailed in your warranty card. If you didn't mail in your warranty card, there's a replacement fee of \$10.00. Please allow 3 to 4 weeks for delivery.

When you send in the warranty card, you're entered into our customer files. This lets us notify you of product upgrades and future releases. It also helps us learn more about you as a software consumer, which helps us develop products that you can enjoy.

Complete details on the limited warranty are as follows.

## Limited Warranty

Walt Disney Computer Software warrants to the original purchaser of this copy of the computer software program entitled THE ANIMATION STUDIO that the disks on which this program is recorded will be free from defects in materials and workmanship for ninety days from the date of purchase. This warranty applies only to the original purchaser who has filed a warranty card with Walt Disney Computer Software.

Defective program disks which have not been subjected to misuse, excessive wear, or damage due to carelessness and which are returned by the original purchaser within ninety days of date of purchase will be replaced without charge. Otherwise, damaged program disk(s) may be replaced for \$10.00 as long as the program is still being manufactured by Walt Disney Computer Software.

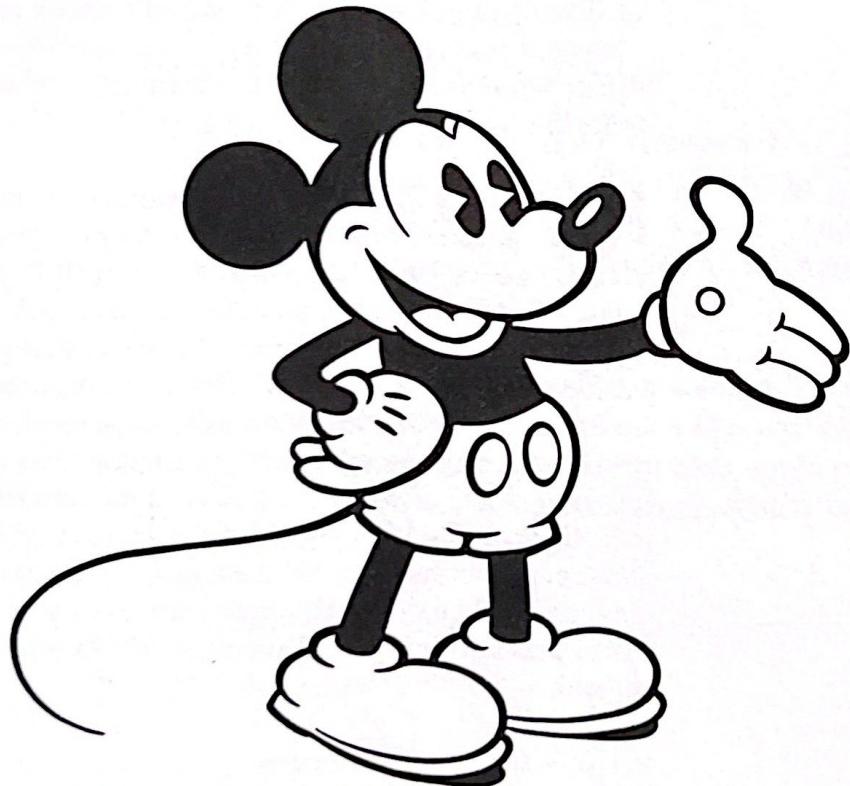
The warranty is the only express warranty pertaining to this software program and no other representations or claims of any nature shall be binding on or obligate Walt Disney Computer Software. Any implied warranties of merchantability or fitness for a particular purpose, if applicable, are limited to the ninety day period described above. Walt Disney Computer Software shall not be liable for special, incidental, consequential, or other damages resulting from possession, use, or malfunction of this software program. Some states do not allow limitation on how long an implied warranty lasts and/or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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500 S. Buena Vista Street  
Burbank, CA 91521



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# GLOSSARY

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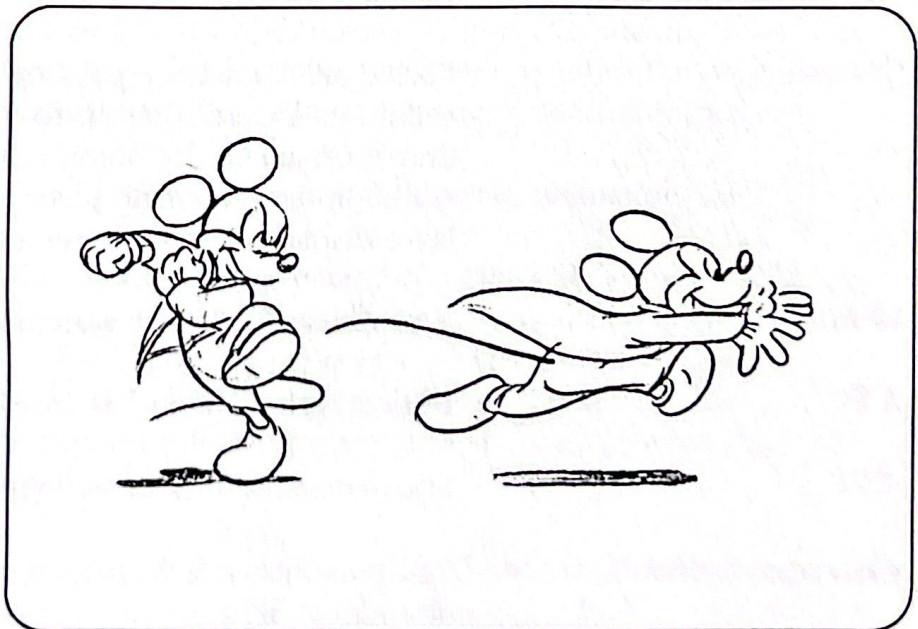


**.ANM**

A file extension for an Amin file, a format widely-used in the Amiga animation world

**Anticipation**

The specific movement, whether subtle or broad, preceding a major action, which leads the eye through the sequence of motions clearly. It is the idea that, "before you go one way, you must go the other way first." This principle is evident in almost every action. The exaggerated wind-up to a cartoon run as shown in the illustration is a good example of this principle applied to animation.



*Figure G-1. Anticipation*

**Appeal**

The overall effect of pleasing design, strong drawing, simple, pleasing shapes, and clear communication, which give a character magnetism. If the audience does not want to look at a character, communication is lost.



<b>Arc</b>	Plotting of the slightly circular path followed by most living creature's movements. This creates pleasing designs in a two-dimensional path of action, and gives fluidity to the movements.
<b>Back Up</b>	To make a spare copy of a disk or a file on a disk. It's a good idea to make backup copies of original files and disks that are important to you.
<b>.BBM</b>	File extension for a brush (generated by The Animation Studio).
<b>Cel</b>	Technically, a cel is a painting of the drawn animation on celluloid. A cel also refers to a single piece of artwork drawn on acetate or onion skin paper. In The Animation Studio, a cel is a single piece of artwork drawn on one layer displayed on the screen.
<b>CFast</b>	A propriety file format specific to The Animation Studio.
<b>.CFC</b>	File extension for a CFast Pencil Test file.
<b>.CFT</b>	File extension for a CFast Ink & Paint file.
<b>Characterization</b>	The personality of a character. The special quality, in attitude or behavior, that makes a character unique.
<b>Click</b>	To position the mouse pointer on something; then quickly pressing and releasing the mouse button.
<b>Dithering</b>	A technique that alternates the values of dots or pixels to create an intermediate value.
<b>DOS</b>	Disk Operating System.
<b>Drag</b>	The process of holding the mouse button down, moving the mouse, and then releasing the mouse button.

## **Effects Animation**

The non-character elements of an animated film that require movement. (i.e., bubbles, lights, cars, shadows, etc.)

## **Exaggeration**

Finding the central concept of an action or sequence, and caricaturing, developing, and highlighting its essence for clarity. Poses can also be pushed well beyond reality. Unlike live-action, the artists can control exactly what the audience will see.

## **Exposure Sheet**

In traditional animation, the Exposure Sheet is a guideline by which the animators set up timing and events. It is similar to a list of things to do and when to do them. The Animation Studio Exposure Sheet includes the computer commands which control timing, sounds and music.

## **Flesh Out**

To add more detail to the drawing, animation, etc.

## **Follow Through Overlapping Action**

The continued movement of a character's body, limbs, or clothing after the figure has stopped and settled into a final or "held" position. This give weight, solidity, and believability to the figure. It keeps the action from becoming stiff and frozen, and also can provide the humorous "gag."

## **Frame**

A single still picture in a film. There are 24 frames per second in conventional film making, which means that 24 frames pass in front of the film projector every second. Animation is often shown in twos: each cel is shown twice, once every other frame. This depends on the timing requirements of the animation. Video standards use 30 frames per second.



**Frisket**

An art term for a masking sheet used in painting or airbrushing. This masking sheet is used to prevent paint from getting on protected parts of the artwork during creation. For example, if you were painting a landscape scene which had a blue sky and a green horizon, a frisket might be used to mask out the blue sky while you painted the green of the horizon.

**Gag**

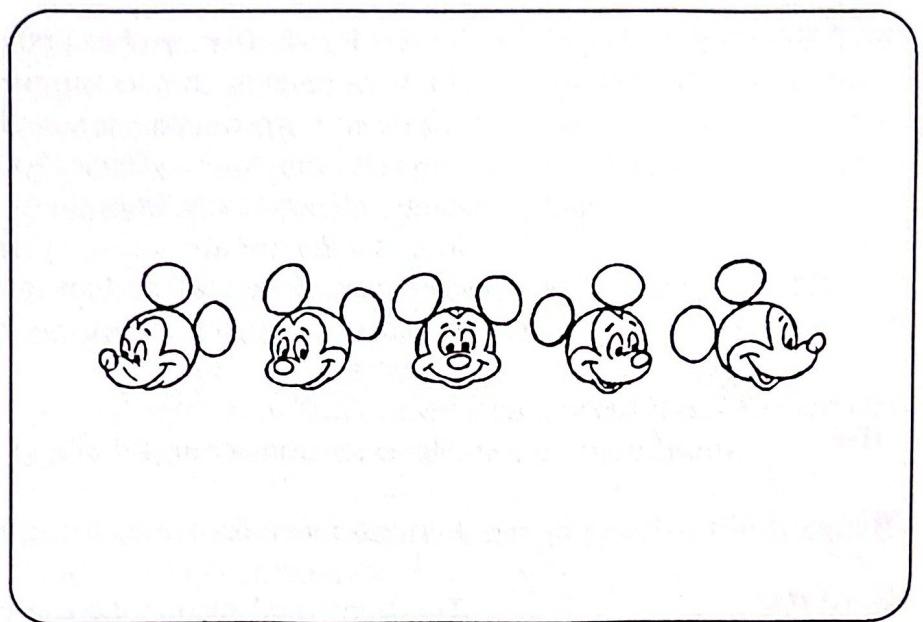
A humorous cartoon, picture, or short animation.

**Icon**

A symbol that represents an object, concept, function, or tool.

**IFF**

(Interchange File Format) A file format that saves each cel of an animation as a separate file. All of the saved cels are included in one subdirectory. IFF is considered a universal file format since it can make use of single cels from other paint packages. IFF files can be identified by their .LBM extensions.



*Figure G-2. In-betweening*

**In-Between Method**

The drawings made between extremes for the purpose of "carrying" the action of a character through smoothly. You may only have one drawing between two extremes, or you may have many more. The best method is to create the middle drawing first. The animator who adds the in-between drawings is called the "in-betweener."

The process of always making the middle drawing first and continuing to split the action in half is a basic technique in the animated cartoon field.

**.INS**

File extension for a sound effect file.



## **Instruments**

Either digitized or synthesized sounds. When played at different speeds, they compose the notes of a score. Digitized instruments are usually used to create interesting and different sound effects. Sounds of a human voice and sound effects taken from things other than musical instruments are also used. Synthesized sounds are computer generated and are sometimes preferred over digitized instruments because they use less computer memory.

## **.LBM**

File extension for an IFF file (a common IBM paint file).

## **.M\***

File extension for a font (used by The Animation Studio).

## **Menu Bar**

The horizontal strip at the top of the screen that contains menu titles.

## **Menu Item**

A choice in a menu, which usually selects a command, function, or requester.

## **Menu Title**

A word or phrase in the menu bar that designates one menu. Selecting the menu title causes the title to be highlighted and its menu to appear below.

## **Morgue**

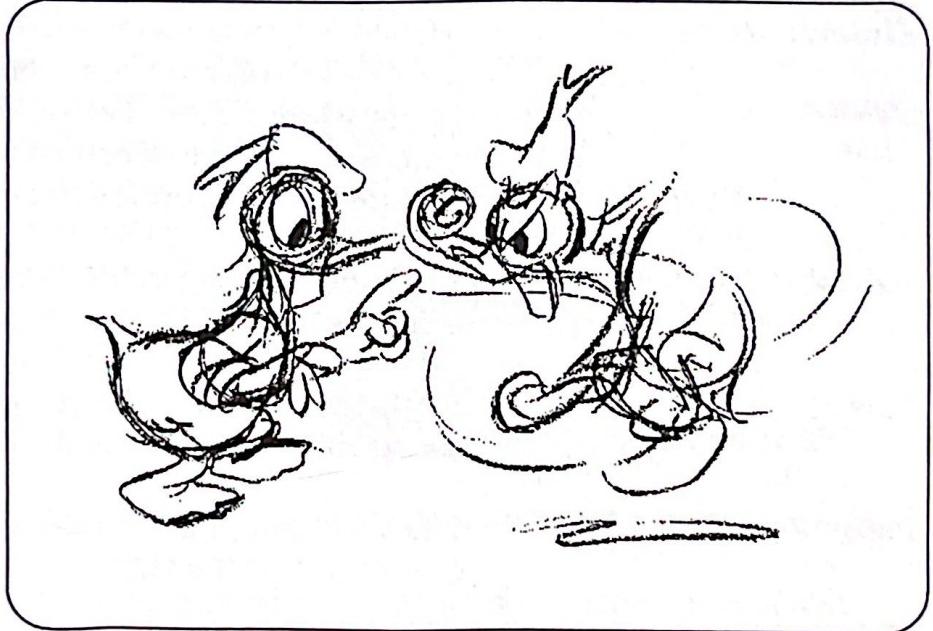
The place where an animation studio saves all cels, drawings, and artwork.

## **Multiplane Camera**

A device created by the Walt Disney Studio to simulate a three-dimensional effect for animation. The environment is painted on separate layers of glass and shot with a deep-focus lens.

<b>Onion Skin Effect</b>	The effect where you can see several cels at a time. The top cel is the darkest, with those cels beneath becoming progressively lighter. Being able to see the positions of the objects on a series of cels enables you to more precisely position them in relation to each other.
<b>Palette</b>	In The Animation Studio, palette refers to the available colors in Ink & Paint.
<b>Parent</b>	In The Animation Studio program, Parent takes you up the file structure and back to the disk volume listing.
<b>Path</b>	The subdirectory or subdirectories in which a file is stored (i.e., C:\DAS\LIBRARY).
<b>Path of Action</b>	The designed pattern that a character or shape follows in its action.
<b>Pixel</b>	Shortened term for “picture element.” A pixel is the smallest possible element (usually a tiny square) on a computer screen. A computer drawing is made up of pixels.
<b>Requester</b>	A window that appears on the screen and asks you for input.
<b>Rough</b>	A very loose freehand drawing used to develop a character or setting.





*Figure G-3. Rough Character Sketch*

**Score**

The musical sound track of a motion picture.

**.SEC**

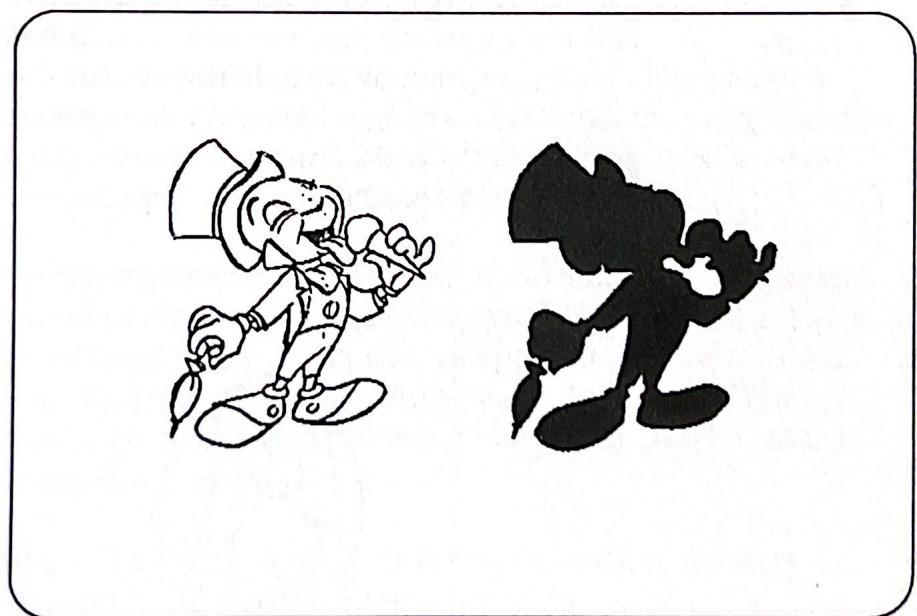
File extension for a secured CFast Ink & Paint file.

**Secondary Action**

Minor movements or actions within the figure which reinforce the main idea of the major action. For example, blushing is a secondary action to the main action of head-ducking to indicate shyness.

## Silhouette Test

A long standing rule in animation is that a good extreme pose should read in silhouette. This means that you should be able to “black in” the pose and still clearly see what the character is doing. The reason for this rule is that on the motion picture screen, you do not have the opportunity to study each pose as you do in many other types of artwork. The impression of each key pose needs to be as clear and unmistakable as you can make it.



*Figure G-4. Silhouette Test*

## Single-Stepping

The process of studying an animation by viewing each cel one at a time in proper sequence.

## Slow In and Slow Out

The timing of in-between drawings between key poses to move from one extreme to the next. More drawings are planned near each major pose or action to keep each movement from being timed too evenly.

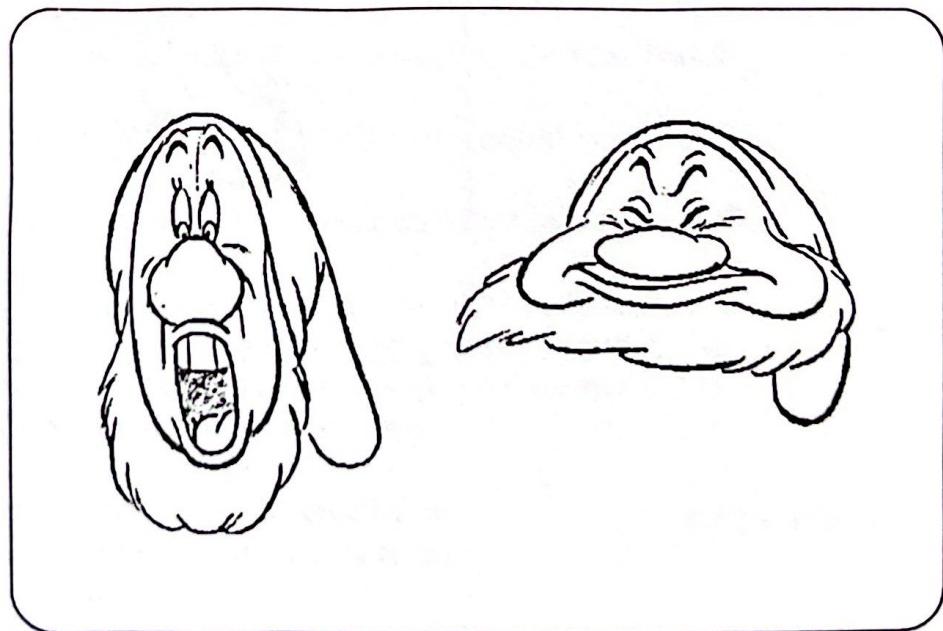


## Solid Drawing

The ability to draw and render well, giving each drawing weight, depth, balance, and clarity. There is no way to overstate the importance of solid draftsmanship.

## Squash and Stretch

The contracting and expanding movement within a shape as it progresses through an action, showing elasticity and volume. Without this, characters would seem stiff and mechanical. The squashing and stretching of forms is a basic principle found in nature. A slow motion camera often reveals the extent to which forms are distorted in natural action. The animator must exaggerate these shape changes. A good rule to remember is that the volume should remain approximately the same whether the form is squashed or stretched.



*Figure G-5. Squash and Stretch*

## **Staging**

The way a story is composed, a design for the action, and the camera angle used. Staging is important in conveying meaning, mood, emotion, and relationship to the story.

## **Storyboards**

Large boards on which sketches showing every stage of the action, story, and character development can be displayed for discussion, revision, and acceptance of the story and characters. Storyboards are like very detailed comic strips and are one of animation's most crucial tools. They allow film makers to visualize cartoon action that would be difficult to describe. All of the conceptual elements of a cartoon are integrated and reworked until the complete film is shown in a series of drawings. The storyboard become the actual script of an animated film.

## **Story Reel**

A series of sketches that simulate movement, with dialog and sound effects added, somewhat like a comic strip. The storyboard is timed and shot to approximate the finished film. The film maker can see a "rough" version of the movie he or she plans to make before the creation of the animation begins.

## **Story Structure**

The simplified, overall sequence of events in the story line. Generally a plot divided into three acts.

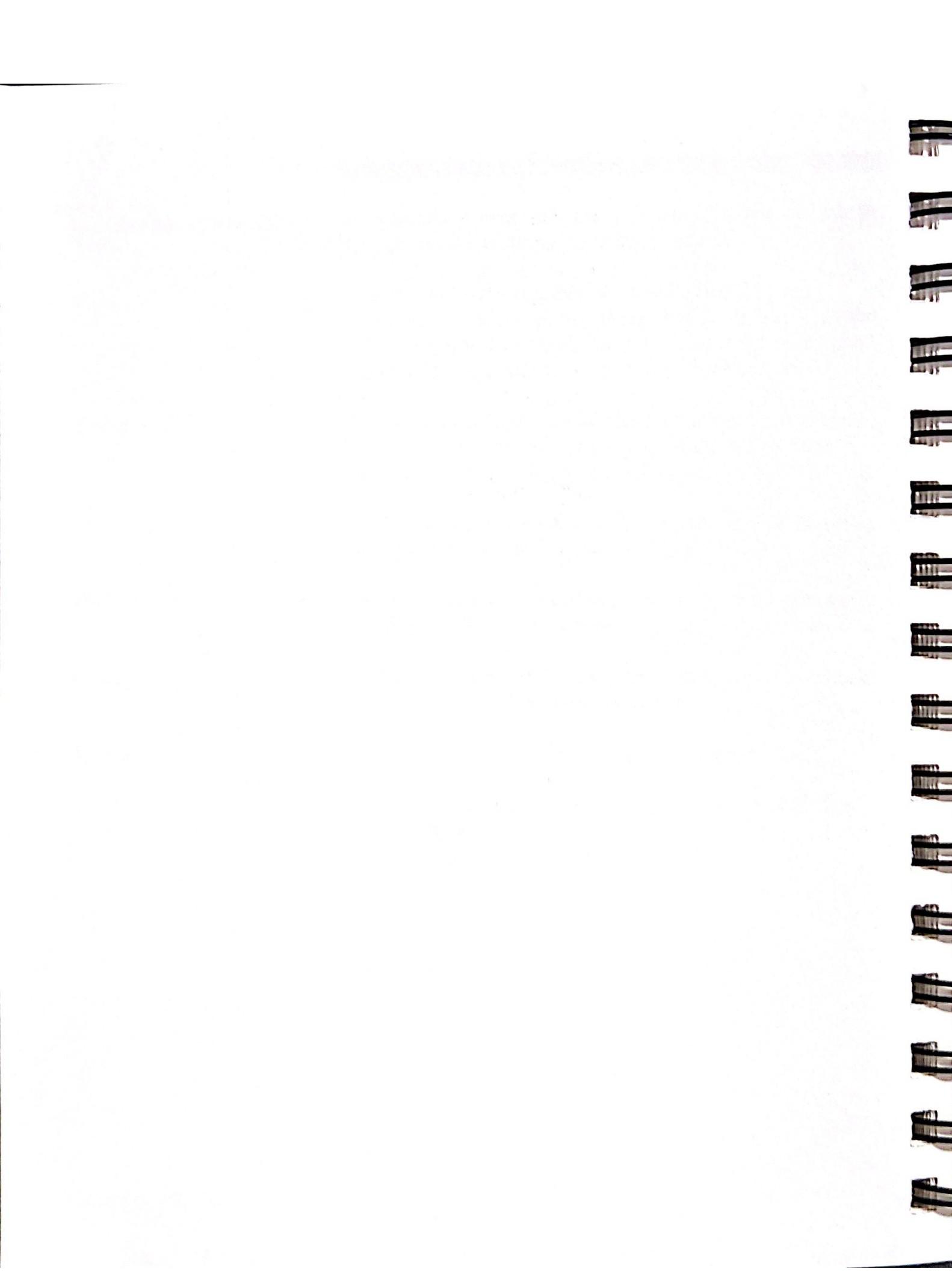
## **Straight Ahead Action and Pose to Pose**

Straight ahead action is a working technique for animators who work straight through a sequence from beginning to end as ideas occur to them, gaining spontaneity. In pose to pose action, animators first decide exactly which major movements and actions are needed and they draw them first. The animator then fills in the remaining frames with "in-between" actions. This allows for more planned, dramatic acting.



<b>Synchronized Sound</b>	The process of matching, frame for frame, a sound track to film, giving the illusion of a talking picture.
<b>Timing</b>	Determined by the number of drawings used in any movement sequence, timing is the rhythm or pacing of the action or acting on screen. Used to express character and mood, timing can affect the meaning of the action.
<b>Toolbox</b>	The box on the right side of The Animation Studio Pencil Test and Ink & Paint screens that provide icons of the drawing tools, and functions available.
<b>.VOC</b>	File extension for a sound effect that can only be heard in The Animation Studio through a Sound Blaster.
<b>Voice Casting</b>	The process of selecting actors, actresses, or other voice professionals to be the voices of animated characters.
<b>Volume</b>	In The Animation Studio program, Volume lets you check other disk drives available in your system.
<b>Window</b>	The area that displays information on your monitor.
<b>.XPO</b>	File extension for an Exposure Sheet (generated by The Animation Studio).





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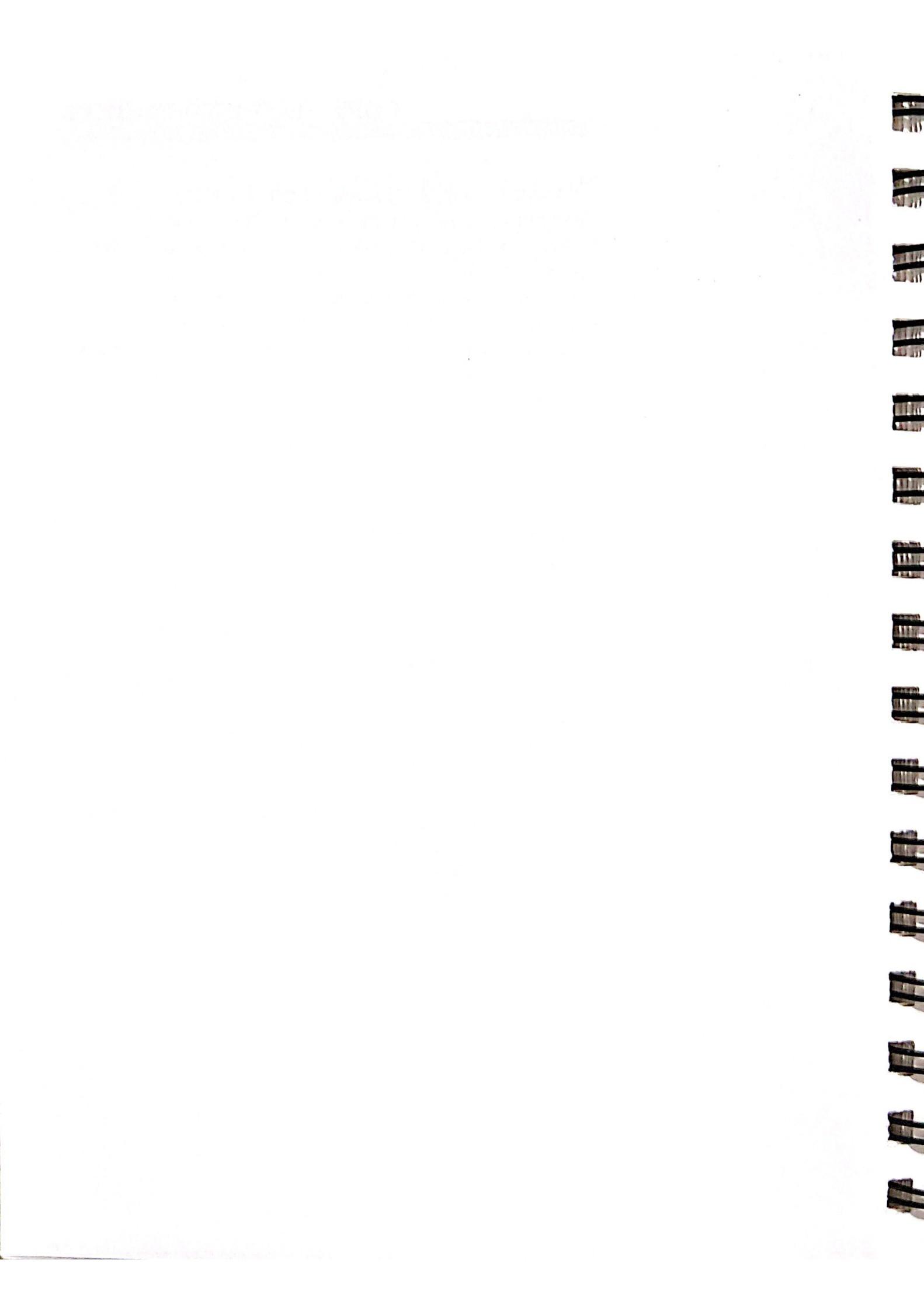
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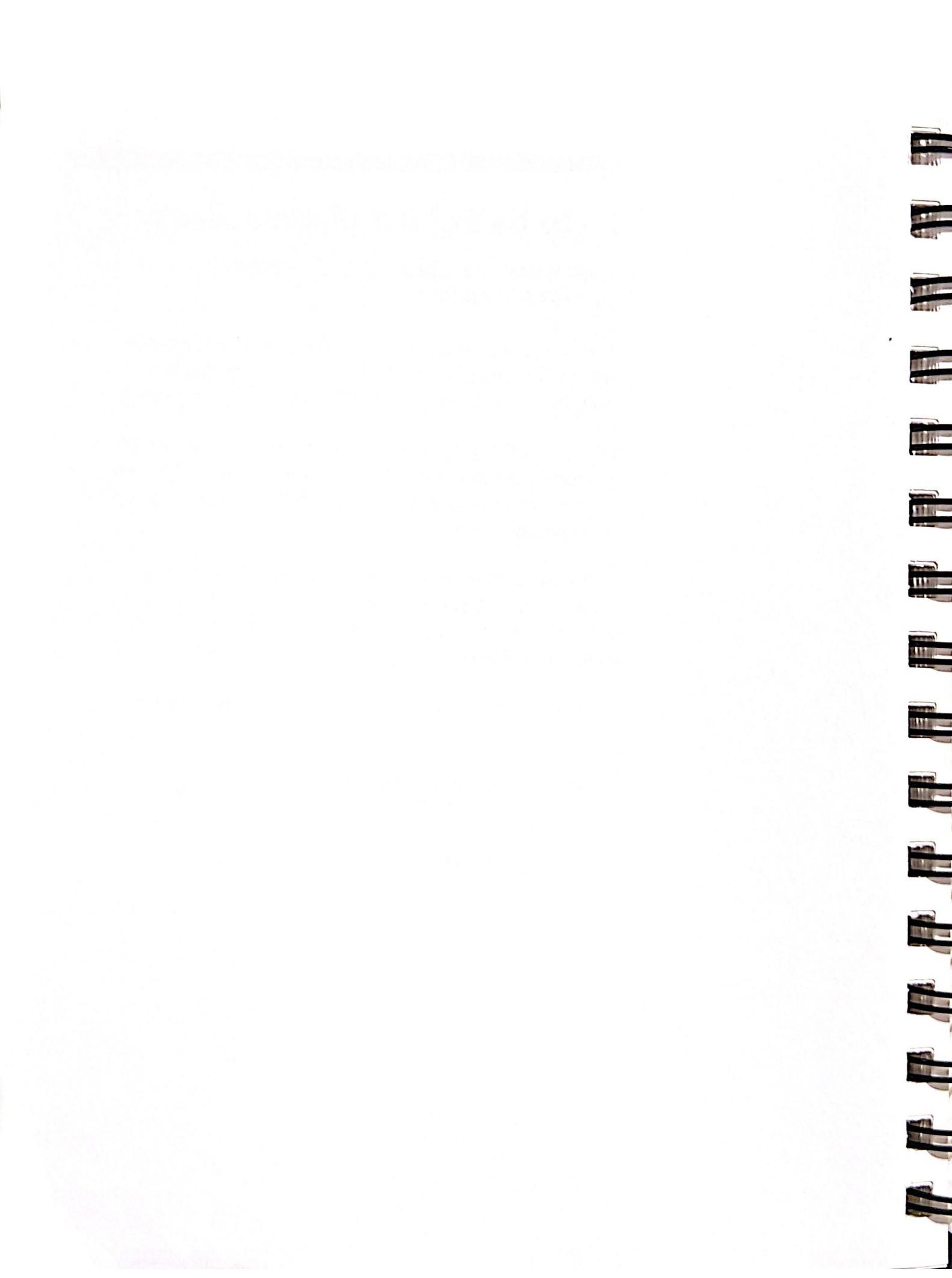
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